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CONTENTS

OF

VOL XXXVII

OF

"THE INDIAN MEDICAL GAZETTE."

ORIGINAL ARTICLES —

	<i>Page</i>
Ple-Service Surgeons By Lieut-Col D G Crawford, M.B., I.M.S.	1, 41
Typhoid as a Common Continued Fever of Natives in Calcutta By Leonard Rogers, M.D., M.R.C.P., I.M.S.	6
A Preliminary Report of the Observations of the Habits of Anopheles By Lieut-Col R N Campbell, M.B., I.M.S., and U N Brahmachari, M.A., M.B.	12
Anopheles Mosquitos in Tezpur, Assam By Chas A Bentley, M.B., C.M. (Edin)	15
A Further Note on the Occurrence of Typhoid Fever in the Natives of India By Capt George Lamb, M.B. (Glas), I.M.S.	48
Notes on an Outbreak of Saria with Observations on the Trypanosoma By Lieut E D W Grieg, M.B. (Edin), B.Sc., I.M.S.	50
The Thyroid Gland and Puerperal Convulsions By M Sinnatamby, M.D., F.R.C.S.	53
Weights of Human Viscera in Natives of Bengal By Major W J Buchanan, I.M.S.	56
Some Practical Suggestions for the Prevention of Malarial Fevers By Capt G T Bridwood, M.A., M.D., D.P.H., I.M.S.	81
Cocaine as an Intoxicant By K C Bose, L.M.S., C.I.E., &c., &c.	85
The Therapeutic of Semi-Carpus Anacardium By Hem Chandra Sen, M.D.	88
Notes on the Prevalence of Filariasis in the Calcutta Police Force By Major C R M Green, F.R.C.S. (Eng), D.P.H. (Camb), I.M.S.	91
Observation of the Clotting Power of the Blood in Plague By Alice M Cothorn, M.B. B.S.	92
An Unusual Form of Bubonic Plague By Major J Chaytor-White, M.D. (Edin), D.P.H. (Camb), I.M.S.	92
Quartan Fever in Calcutta and Dacca By U N Brahmachari, M.A., M.B.	93
Some Cases of Cerebro-Spinal Meningitis (Epidemic?) By J Rutter Williamson, M.B.	94
Notes on the Radical Cure of Hydrocele and Hematocele By Capt W J Niblock, I.M.S.	121
Some Notes on Cerebro-Spinal Fever By Major Malcolm Moore, M.D., I.M.S.	125
The Importance of the Role played by Mosquitos in Tropical Pathology By Captain W Glen Liston, I.M.S.	127
A Peculiar Case of Malignant Tertian Fever By G C Chatterjee	131
The Treatment of Typhoid Fever by the Woodbridge Method in India By Major A G Hendley, I.M.S.	132
The Iodine Trichloride Treatment of Plague By T K Gajjar, M.A., B.Sc.	134
An Interesting Case of Acute Pneumonia By Capt T H Symons, I.M.S.	134
Cancer in India By Capt W J Niblock, I.M.S.	161
A Decade of Tumour Surgery in the Kashmir Mission Hospital By Ernest F Neve, M.D., F.R.C.S., F.	164
Report on an Experimental Enquiry on the Disinfection of Floors for Plague By Leonard Rogers, M.D., M.R.C.P., I.M.S.	166
The Best Operation for Radical Cure of Inguinal Hernia By Capt C Duer, M.B., F.R.C.S., I.M.S.	170

ORIGINAL ARTICLES—*Continued*

Page

A Case of Snake-Bite By Lieut C C Munson, I M S	171
Some Important Indigenous Drugs and their Uses By Asst-Surgn Gurm Nath Sen	171
Notes of some Toxicological Experiences in Bengal and in the Punjab By Major C H Bedford, DSc, MD (Edin), I M S	202
The Frequency of Poisoning in Calcutta, with some Illustrative Cases By Capt C J Robertson-Milne, MB (Aber), I M S	207
Notes on Rupture of the Spleen By Lieut-Col D G Crawford, MB, I M S	211
Six Cases of Ruptured Spleen, including a Case of Spontaneous Rupture of an Enlarged Spleen By Capt C H James, I M S	221
Crime in Insanity By Capt G F W Ewens, MD, I M S	224
Medical Examination in Cases of Rape By Arthur Powell, B A, MCH	230
Medico-Legal Notes By Asst-Surgn Purno Chander Singh	234
Medical Evidence in India By Major A G Hendley, I M S	239
The Indiscriminate Use of the <i>Latha</i> By Capt A F Stevens, I M S	241
Injuries caused by <i>Latha</i> Blows By R K Gupta, L M S, M R A S (Lond)	243
Notes of Medico-Legal Cases By Major W D Sutherland, MB, I M S	244
Perforation of the Stomach and Duodenum from disease A Cause of Suspicious Death By Major J T Calvert, MB (Lond), DPH (Camb), I M S	246
Medico-Legal Notes from Alipore By F J Daley	246
The Differentiation of Crude Excise Opium By Capt G T Budwood, MD, I M S	251
Chmatic Buboos By Arnold Caddy, F R C S (Eng)	257
The Recent Outbreak of <i>Mahamari</i> (Plague) in Gairwal By Major J Chaytor-White, MD, DPH, I M S (Camb)	263
A Recurrence of Epidemic Diopsy in Calcutta in 1901 By Capt Leonard Rogers, MD, MRCP, I M S	268
Further Experiments in connection with the Pathology of Beri-beri By Capt E R Rost, I M S	270
A Case of "True" Intestinal Sand By Major Charles H Bedford, DSc, MD (Edin), I M S.	272
The <i>Post-Mortem</i> Appearances in Cases of Asphyxia caused by Drowning By Lieut-Col J B Gibbons, I M S	297
Return of Sudden Deaths requiring Coroner's Inquests for five years (from 1896 to 1900) in the City of Calcutta, with Remarks By Major C R M Green, F R C S, I M S	301
Analysis of the <i>Post-Mortem</i> Examinations in the Muhsidabad District during the past five years By Lieut-Col T G Grainger, MD, I M S	303
Dilatation of the Pupil in Chlorodyne Poisoning By Arthur Powell, B A, MCH	306
A Case of Poisoning from Commercial Cyanide of Potash, Corrosive Action	306
The Plague Commission on Haffkine's Anti-plague Inoculation By N H Choksy, MD	306
Prevalence of Stone amongst the Rice-eating Population of Lower Bengal By Jadab Kisto Sen	311
Epidemic Malta Fever in Assam—a short Preliminary Notice of certain Recent Discoveries relating to the True Nature of <i>Kala-Azar</i> By Chas A Bentley, MD (Edin)	337
Report on Cerebro-Spinal Meningitis in the Bhagalpur Central Jail, 1900-1901 By Capt E A R Newman, MD, I M S	340
Experiences in a Chinese Hospital By Capt T H Foulkes, I M S	348
The Inunction Treatment of Syphilis as carried out at Aix-la Chapelle By Capt C C Barry, I M S	351
Note on Serum Reactions and the Temperature Curve in Chronic Malaria, including <i>Kala-Azar</i> By Capt Leonard Rogers, MD, MRCP, I M S	377
Note on <i>Kala-Azar</i> By J Dodds Price, M R C S (Eng), L R C P (Lond)	379
A Note on Dengue Fever By Capt W G Pridmore, I M S	380
Further Note on Intestinal Sand By Major C H Bedford, DSc, MD, I M S	381
Six Cases of Melancholic Stupor By Capt E F W Ewens, I M S	381
Some Cases of Sudden Death in Native Regiments By Capt S Anderson, MB, BSc, I M S	386
Case of Cerebro-Spinal Fever Simulating Poisoning By Capt S Browning Smith, I M S	389
A Method of Direct Cultivation By Capt E R. Rost, I M S	390
The Pathology of Mycetoma By Lieut-Col J Maitland, MD, I M S	417

ORIGINAL ARTICLES—*Concluded*

	<i>Page</i>
Hypnotism By Capt T H Delany, MB, IMS ..	418
Tuberculosis in Jails By Capt E Waters, IMS ..	421
Is Malarial Cachexia purely Malarial? By Capt L Rogers, MD, MRCP, IMS	424
Is Antivenene of any use? By Major P Carr-White, MD, IMS	431
Elephantiasis of Scrotum By Lieut-Col R D Murray, MB, IMS	457
Malaria and <i>Kala-Azan</i> By C A Bentley, MB (Edin), CM	459
Cases of Heart Disease By Capt B Chatterton, MD, MCh, IMS	465
Case of Scarlet Fever at Ranchi By Capt. R. H Maddox, IMS	470
Ehrlich's Theory of Immunity By Capt E D W Greig, MB, BSC (Edin), IMS	471

A MIRROR OF HOSPITAL PRACTICE —

Gastrotomy for Removal of Foreign Bodies (55 Rupees) from the Stomach—Recovery By Lt-Col G W P Dennys, MRCS (Eng), LRCP (Lond), IMS ..	16
Cases of Gynæcomastia By Capt Robert Budd, MD, FRCS, IMS	19
Five Cases of Perineal Lithotomy By Capt Henry Smith, MD, MCh, IMS	57
Chronic Inflammations of Lymphatic Glands in Rangoon By Capt C. Duer, MB, FRCS, IMS	58
A Case of Compound Depressed Fracture of the Skull—Recovery By Capt E R Rost, MB, IMS	59
The Use of Cocaine in Minor Surgery By P V Shikare, LM & S	59
A Case of Hernia in the Right Hypochondriac Region By Asst-Surgn R K Gupta	60
A Case of Enchondroma of Sub-Maxillary Gland By Major R Robertson, MB, IMS	94
Interscapulo-Thoracic Amputation By Capt W J Niblock, IMS	95
A Case of "Syphilitic Fever" By Capt E Hasell Wright, IMS	96
Syphilitic Pleurisy By Capt C C Barry, IMS	97
Extensive Operation for Aneurism By Major A Street, FRCS, IMS	98
A Case of Aneurism of the Ascending Aorta By Asst-Surgn Satis Chunder Banerjee	99
A Case of Snake-Bite By B B Basu	100
A Few Surgical Notes By Capt Henry Smith, MD, IMS	100
Amputation of the Upper Extremity, &c By Lt-Col J Martland, MD, IMS	136
Ligature of Vas Deferens, &c By Asst-Surgn Feioz Din Mohioof	137
A Case of Gangrene, &c By Lieut C C Murison, IMS	138
Abdominal Wound, &c By Asst-Surgeon Taranath Deb	139
Notes on a Case of Subpleural Abscess, &c By Asst-Surgn K P Banerjee	140
Horny Growth arising from Neglected Sebaceous Cyst By Lieut Col W P Carson, MB, IMS	176
Case of Hydatidiform Mole—Natural Expulsion Recovery By Margaret M Traill Christie, MD, BS (Lond)	177
Case of Hydrophobia Treated with Leaves of <i>Acacia Arabica</i> (<i>Babul</i>) Recovery By Asst-Surgn R K Gupta, LMS, MRAS (Lond)	177
Leprosy and Ainhum By Asst-Surgn Ambica Churn Dutt	178
A Curious Case of Urinary Fistulæ By Asst-Surgn K P Banerjee	179
Case of Penetrating Abdominal Wound Recovery By Asst-Surgn L Dass	179
A Case of Penetrating Wound of the Abdomen with Protrusion of the Intestine Recovery By George Sinclair	180
A Leg Splint By D M Mon, AM, MD	273
Large Hydrocele of the Tunica Vaginalis Testis, occupying the major part of the Abdominal Cavity By Lieut-Col J Martland, MD, IMS	274
A Case of Antero-Posterior Bullet Wound of Knee-Joint without Osseous Injury By Lieut Godfrey Charles, BA, MB, BCh, MRCS, LRCP, IMS	274
Statistics of the Medico-Legal Investigations in Moradabad, 1896—1901 inclusive By Major J K Close, MD, IMS	275
A Case of Filarial Disease of the Pelvic Lymphatic Vessels simulating Double Inguinal Hernia By Lieut-Col J Martland, MD, IMS	313
A Case of Typhoid Fever in a Native Prisoner By Major J R Adie, MB (Lond), IMS	314
Bullet Wound of Large and Small Intestine—Commencing Peritonitis—Operation Recovery By Major J T Culvert, MB (Lond), IMS	315
The Employment of Setons in the District of Backergunge By Captain C J Robertson-Milne, IMS	316

A MIRROR OF HOSPITAL PRACTICE—*Concluded*

	<i>Page</i>
Procidencia Recti—Excision and Sigmoidopexy By Major D M Mon, A M, M D, I M S	353
Encysted Vesical Calculus after Gunshot Wound of the Bladder By Capt J H Hugo, D S O, M B, B S (Lond), I M S	355
Suppuration in connection with a Simple Fracture of the Femur By B Chatterton, F R C S, I	356
A New Operation for Enlarged Spleen By Capt E R Rost, I M S	356
Liver Abscess causing Acute Jaundice by Pressure on the Hepatic Duct By Major D M Mon, M A, M D, I M S	391
Note on the Analysis of the Biliary Concretions By Major C H Bedford, D S c, M D, I M S	392
Some Cases of Malignant Disease in Natives of India By Capt E A R Newman, M D, I M S	392
A Case of Atony of the Bladder By Capt C Duer, M B, F R C S, I M S	394
Cases of Reversed Peristalsis By Asst-Surgn Feroz Din Mohroof	394
Case of Landry's Paralysis By Lieut-Col C M Thompson, M B (Dub), I M S	435
A Case of Tetanus By P V Shukla, I M & S	436
Case of Hydatid By Lieut-Col A Silcock, M D, D P H, I M S	473
Death from Snake-Bite By Capt W H Kenrick, I M S	474
Cases of Snake-bite By Lieut C C Munson, I M S	475
Case of Thrombosis By Asst-Surgn G P Mittra, M B	476

EDITORIALS —

The late Surgeon-General Harvey, I M S	21
Annus Medicus	22
The Robert Harvey Memorial Fund	61
The Sanitary Commissioner's Note on Jails	61
Preliminary Report of the Malaria Commission	101
The Robert Harvey Memorial Fund	102
Eyesight in the Army	141
The term "Remittent" as applied to fevers	141
Irrigation, Mosquitos and Malaria	181
Our Special Medico-legal Number	201
Modern views on Dysentery	277
Military Medical Journals	317
The Gigantic Anti-plague Campaign in the Punjab	357
Enteric fever and sewage disposal	397
The factors of Malarial Endemicity	437
American Views on Heatstroke	477

EDITORIAL NOTES ON CURRENT TOPICS —

Horace Hayman Wilson	25
The forthcoming Special Medico-legal Number	26
Kidney Disease in Malaria	26
A Medico-Military Journal	27
Curative value of Lustig's Serum	27
Virulence of Plague in Bombay	28
Proposed memorial to Surgeon-General Harvey	30
The Identity of <i>Filaria Nocturna</i> and <i>Filaria Diurna</i>	64
A Malaria Problem	65
Cancer and Malaria	65
Methods of Disinfection against Mosquitos	66
A Diagnostic Table of Ulcers	103
A Medical Directory for Bengal	103
Pathology of Scurvy	104
Ice as a conveyer of disease	105
Anopheles and no Malaria	105
Sale of Cocaine in Bengal	105
Madras Branch, B M A	106

EDITORIAL NOTES ON CURRENT TOPICS—*Concluded*

New Journal of Surgeons, U S Army	106
Mutability of Bacteria	144
Snake Venoms, Cobra and Daboi	145
Lanoline vs Glycerine Vaccine Lymph	146
Amoebic Dysentery in Children	147
A Russian Experience of Litholapaxy	147
The Transactions of the Nagpur Malaria Conference	148
The Harvey Memorial Fund	150
Dengue as a Mosquito-borne Disease	183
A Plague Map, 1894-1900	183
The Flea theory of Plague Transmission	184
Surgical Treatment of Filariasis	184
Captain S P James' Pamphlet on Malaria	184
Typhoid and Cavalry	185
Paratyphoid	185
Arsenic and Beri-beri	185
Decomposition	251
Methods of Criminal Abortion in India	252
Adipocere in India	252
Tables of Weights of Viscera	254
Some Cadaveric Phenomena	255
The Sanitation of Mofussil Bazaris	282
Has Pellagra been observed in India?	282
Mahamari or Plague in Garhwal Hills	283
The Trypanosomes	320
Records of the Egyptian Medical School	320
Etiology of Dengue	321
Value of Kernig's Sign in Meningitis	321
Introduction of Vaccination into India	322
Acetylene Lights for Field Hospitals	322
The Trypanosome in the Blood of Man	359
Proposed Journal for R A M C	360
Epidemic Cerebro-spinal Fever	361
Prickly-heat as an Infective Disease	361
Harvey Memorial Fund	362
Stone in the bladder in Egypt	399
Mortality in typhoid fever	400
Identity of Surra and Tsetse Fly disease	401
Insects and Cholera	401
Paratyphoid	402
The Nagpur Malarial Conference	439
The spread of Cerebro-spinal Fever in India	440
Education of Army Medical Officers	441
The Norwegian Report on Beri-beri	480
Sources of Arsenic in India	481
Sterilisation of Catheters	481
Medical Representation on Viceroy's Council	482

REVIEWS AND NOTICES OF BOOKS —

Alcoholism, a study in Heredity By G Archdall Reid, MB, FRSE	30
Water and Water-supplies By John C Thresh, MD, DPH	32
Text-Book of Pharmacology and Therapeutics By W Hale White, MD	33
Select Methods in Food Analysis By Henry Leffmann, AM, MD	33
Syphilis and other Venereal Diseases By H DeMeine, MRCS	34
The Pocket Gray, or Anatomist's Vade-Mecum	34
Freyberger's Pocket Formulary	35
Clinical Lectures on Structure of the Urethra and Enlargement of the Prostate By Lt - Colonel P J Freyer, MA, MD, IMS	67
The Report of the Liverpool Malaria Expedition to Nigeria	69

REVIEWS AND NOTICES OF BOOKS—*Continued*

	<i>Page</i>
The Principles and Practice of Medicine By Wm Osler	70
The Criminal By Havelock Ellis	71
Official Year Book of the Scientific and Learned Societies of Great Britain and Ireland	72
Lessons in Massage By Margaret D Palmer	72
The Treatment of Disease by Climate By Ram Narain, LMS	73
The Practitioner's Clinical Referee By K M Nadkarni, FRS	73
The Surgical and Medical History of the Naval War between Japan and China, 1894-5	108
The Accessory Sinuses of the Nose By Logan Turner	109
Text-book of Diseases of Women By C B Penrose, MD	110
The Pathology and Treatment of Sexual Impotence By Victor G Veckl, MD	110
A Practical Guide to the Administration of Anæsthetics By R J Probyn Williams, MD	110
Saunders' Medical Hand-Atlases	110
Healing of Nerves By Charles A Ballance	111
Gonorrhœal Arthritis	111
Elementary Ophthalmic Optics	111
A Text-book of Zoology By G P Mudge, BA, BSc (Lond), FRS	111
The Cure of the Morphia Habit By O Jennings, MD	112
A Manual for Midwives in Bengal	112
Synopsis of Practical Chemistry, Inorganic and Organic	150
A Clinical Handbook of Urine Analysis	150
A Handbook of Hygiene	151
Quain's Dictionary of Medicine	151
Illustrated Medical Dictionary	152
Saunders' Hand Atlas and Epitome of Ophthalmoscopy	153
Rhinology, Laryngology and Otology and their Significance in general medicine	153
Saunders' Medical Hand Atlases	153
Saunders' Medical Hand Atlases, Special Pathological Histology	154
Saunders' Medical Hand Atlases Atlas of the Nervous System	154
Handbook of Bacteriological Diagnosis for Practitioners	155
A Text-Book of Obstetrics	155
The Principles of Hygiene	156
Rough Notes on Remedies	156
A Handbook of Gnats or Mosquitos	188
Mosquito Brigades and How to Organise them	189
A Text-Book of the Practice of Medicine	189
Manual of the Practice of Medicine	189
Human Physiology prepared with Special Reference to Students of Medicine	190
Nervous and Mental Diseases	190
Obstetric and Gynæcologic Nursing	191
Menstruation and its Disorders	191
Amateur Dentistry for the Mofussil and Jungle	191
The Rontgen Rays in Medical Works	192
A Manual of Surgical Treatment Part V	284
Saunders' Year Book of Surgery for 1901	285
Leçons sur les Maladies du Système Nerveux	285
Handbook of the Gnats or Mosquitos, 2nd Edition	285
The Rontgen Rays in Medicine and Surgery as an Aid in Diagnosis and as a Therapeutic Agent	286
The Study of the Pulse, Arterial, Venous, and Hepatic, and of the Movements of the Heart	287
Purulent Nasal Discharges their Diagnosis and Treatment	325
Clinical Lectures on Stricture of the Urethra and Enlargement of the Prostate	326
Gibson and Russell's Physical Diagnosis	327
Manual of Military Ophthalmology	327
Handbook of Obstetric Nursing	327
Sander's Hand Atlases "Atlas and Epitome of Labour and Operative Obstetrics"	328
A Text-Book of Pathology	328
Von Limbeck's Pathology of the Blood	329
Directions for class work in Practical Physiology	365
Nothangel's Encyclopædia, Typhoid and Typhus Fevers	366
Practical Surgery for the General Practitioner	366

REVIEWS AND NOTICES OF BOOKS—*Concluded*

Page

The Causes of Death among the Assured in the Scottish Widows' Fund and Life Assurance Society	367
Lectures on the Use of Massage and Early Passive Movements in Recent Fractures	368
Legal Medicine in India and Toxicology By Major Collis Barry, <i>IMS, FRSR, FIC</i>	405
Public Health and Preventive Medicine By C J Lewis, <i>MD</i> , & Andrew Balfour, <i>MD</i>	406
The Official Indigenous Drugs of India By Kaitic C Bose, <i>MB</i>	407
A Veterinary Pharmacopœia of Bazar Drugs By T D E Holmes, <i>MRCVS</i>	407
British Guiana Medical Annual By Drs A T Orzard and C P Kennard	443
Earth and Contagia By V Poope, <i>MD</i>	445
Practitioner's Handbook of Ear, &c	484
Medical Electricity By Dawson Turner	485
Death and Sudden Death By Bionardel and Benham	486
Hygiene for India By Dr C Banks	486
Selected Essays, New Sydenham Society	487
Acute Dilation of the Stomach By Campbell Thomson	487

ILLUSTRATIONS —

Diagram of a drain	13
Anopheles Bentleyi	16
Four Illustrations of Gynæcomastia	21
Seven Typhoid Charts	(to face p) 50
The Parasite of Suna	51, 52
The Clothing of Plague blood	92
Quarant Fever Charts	(to face p) 93
Enchondroma of Submaxillary Gland	94
Chondrosarcoma of Humerus	95
Pulse-tracing, case of Aneurism	99
Diagram of Operations for Hydrocele	123
Chart of Typhoid case, Woodbridge treatment	133
Amputation of Upper Extremity	136
Horny growth from a neglected Cyst	176
Leprosy and Anhum, X-ray of foot	178
Mou's Leg Splint	273
A Typhoid Chart	314
Incisions in Cataract Operations	403
Four-tailed Bandage for Cataract	403
Pathology of Mycetoma	417
Elephantiasis Operations	458
Fever Charts	463
Heart Disease Diagrams	465
Scarlet fever Charts	470

ANNUAL REPORTS —

ASSAM—Dispensary Report	333
Sanitary Report	372
Vaccination Report	492
BENGAL—Hospitals' Report	451
Sanitary Report	371
Vaccination Report	411
BOMBAY—Hospitals' Report	156
Sanitary Report	76
CENTRAL INDIA—Report	193
GULF, PERSIAN—Report	493
HONGKONG—Civil Hospitals Report	412
HYDERABAD ASSIGNED DISTRICTS—Report	194
INDIA—Sanitary Commissioner's Report	192, 281
Note on Jails	449
MADRAS—Sanitary Report	453
General Hospital	369

ANNUAL REPORTS—*Concluded*

	<i>Page</i>
MADRAS— <i>concl'd</i>	
Hospitals	450
Maternity Report	289
Vaccination Report	492
PUNJAB—Sanitary Report	410
Medical Report	491
Vaccination Report	491
RAJPUTANA—Medical Report	493
UNITED PROVINCES OF AGRA AND OUDH—Hospitals	76
Sanitary Report	451
McCulloch's Report on Enteric Fever	288

CURRENT LITERATURE —

Bacteriology (L. Rogers)	445
Biology (S. P. James)	194
Foreign Extracts (W. D. Sutherland)	329
Special Senses (F. P. Maynard)	35, 73, 195
Surgery (D. M. Mon)	447
Obstetrics (K. N. Das)	287

LONDON LETTERS (K. McLeod)	23, 63, 102, 143, 182, 278, 318, 358, 398, 438, 478
SERVICE NOTES	36, 79, 115, 158, 197, 256, 296, 334, 374, 414, 454, 494
THERAPEUTIC NOTES	40, 120, 160, 200, 296, 376
ACKNOWLEDGMENTS, NOTICES, &c	40, 80, 120, 160, 200, 256, 296, 336, 376, 416, 456, 496

INDEX TO VOL. XXXVII

or

"THE INDIAN MEDICAL GAZETTE"

FOR THE YEAR 1902

[Italics signify Reviews CAPITALS signify Editorials]

A		Page			Page			Page
Abortion Criminal, in India		232	Barry Collins, Major, I M S, <i>Legal Medicine</i>		405	Cancer and Betel nut		161, 414
Abscess Liver	112, 196,	391	Basu B B, Case of Snake bite		100	— and Malaria		67, 186
— Subpleural		140	Beaumont Win Memorial to		256	— in Bhagalpore		392
Acetylene Lights for Hospitals		322	Bedford C H, Major, I M S, <i>Books on Chemistry</i>		30, 151	— in Kashmir		164
Adie, J R, Major, I M S, Typhoid in a Native		314	— — — — — Bilis			— in Madras		161
Adipocero in India		252	— Concretion		392	— Research		143, 279
Africa, Central, Malaria in		187	— — — — — Intest		272, 381	— Rost's Experiments on		67
Agar agar, after Eye Enucleation		35	— — — — — Toxi			Carbonic Oxide Poisoning		373
Ainhum and Leprosy		128	— — — — —			Carr White, J, Major, I M S, on		
<i>Alcoholism A Study in Heredity</i>		30	— — — — —			Antivenene		431
Alcohol, Therapeutic Uses of		447	— — — — —			Carson W P, Lt Col, Horn Growth of Cast		176
Aldridge, Captain, R A M C, on Sewage Disposal		397	— — — — —			Cataract and Malaria		193
Amblyopia		35	— — — — —			— and Tetany		35
AMERICAN VIEWS ON HEARTSTROKE	477,	496	— — — — —			Catheter Sterilisation of		481
Amputation, Interscapulo thoracic		95	— — — — —			Cavalry and Typhoid		185
— of Upper Extremity		136	— — — — —			Centenary of Vaccination in India		413
Anaesthetics, Administration of		110	— — — — —			Cercomonas in Ulcer (R Ross)		167
<i>Anatomy Pocket Gray</i>		34	— — — — —			Cerebro spinal Fever, Cases of		91
Andamans, Health of Prisoners in		407	— — — — —			— Kernig's Sign in		321
Anderson, S Capt, I M S, Cases of Sudden Death		386	— — — — —			— in Australia		67
Aneurism, Cases of	97,	98	— — — — —			— in Bhagalpore		340
Ankylostomiasis and Black Marks on Tongue		363	— — — — —			— in Calcutta		452
Annus Medicus		22	— — — — —			— in Helum		359
Anopheles (see also Mosquito)			— — — — —			— in Rangoon		67
— and Colour	78,	157	— — — — —			— in Tochi Valley		387
— and No Malaria		105	— — — — —			— in Uduapur		125
— Habits of		442	— — — — —			— Investigation of		361
— Indian Species		442	— — — — —			— Spread of, in India		440
— in Mauritius		30	— — — — —			— Williamson's Pam		
— in Tezpur		15	— — — — —			phlet on		361
Antivenene, is it of any use?		431	— — — — —			Charles, Godfrey, Lieut, I M S, Mallet Wound of Knee		274
Army Eyesight in	141,	157	— — — — —			Chatterjee, S C, Malignant Tertian Fever		131
— Medical Organisation		447	— — — — —			Chatterton, B, Capt., I M S, Fracture of Femur		356
Arsenic and Beri beri		185	— — — — —			— Heart Diseases		465
— and Cancer		303	— — — — —			Chaytor White, Major, I M S, on <i>Malaria</i>		263
— Sources of, in India		481	— — — — —			Chingoo at Bombay		77
Appendicitis, Cases		371	— — — — —			China, Hospital Experiences in		348
Ascites, Surgical Treatment of		371	— — — — —			Chloro-dyne Poisoning		306
Association, British Medical	187, 234,	319, 402	— — — — —			Choksy, N H, Dr, on Plague	28,	29
Association of Military Surgeons, Journal	26,	106,	— — — — —			— on the Plague Com		
Asylum, Dysentery		103	— — — — —			mission		306
Atlases, Hand, Saunders', see Reviews			— — — — —			Cholera in India, A Duncun on		148
Atony of Bladder, Duer		394	— — — — —			— Insects and		401
B			C			Christie, Margaret I, Dr, Hydatiform Mole		177
Bacteria, Mutability of			Cadaveric Phenomena		255	<i>Climate, Treatment of Disease by</i>		73
<i>Bacteriological Diagnosis</i> , Emery		144	Caddy, Arnold Chmatic Buboos		257	Chmatic Buboos (Caddy)		257
Bannerjee, K P, on Subpleural Abscess		155	Calculus Encysted (Hugo)		355	<i>Clinical Referee, A</i>		73
— — — — — Urinary Fistula		140	— in Bengal		311	Close, J K, Major, I M S, Medical Legal Statistics		275
— — — — — S C, Case of Aneurism		179	— in Egypt		311	Cocain, Abuse of, in Calcutta		85
Barnett, Bruce Capt. R A M C, Hypodermic Use of Quinine		99	— in Germany		283	— in Minor Surgery		59
Barry, C C, Capt, I M S, Aix la Chapelle Treatment of Syphilis		290	Calcutta Origin of Plague in		148	Colour, and the Anopheles	78,	167
Barry, C C, Capt, I M S, Syphilitic Pleurisy		351	— — — — — Poisoning in		207	Commission, Royal Society, on Malaria	101,	108, 437
		97	Calvert, J T, Major I M S, Book on Worms		67	Cordite Eating, to cause Fever		323
			— — — — — Bullet Wound of Intes		315	Cothorn, Alceo, Dr, Clotting of Plague Blood		92
			— — — — — tino		246	Crawford, D G, Lt Col, I M S, Introduction of Vaccination into India	322,	413
			Campbell, R Neil, Lt Col, I M S, Habits of Anopheles		12			

	Page		Page		Page
Crawford, D G, Lt. Col, I M S, Modified compulsory Vaccination	411	Fevers Commission on, needed	372, 403	Hydrocele, large, A (Maitland)	274
—, Pre-Service Surgeons	1, 29, 41	—, Cerebro spinal	67 94, 125, 321 340	Hydrophobia, and <i>Babul</i>	177, 289
—, Rupture of Spleen	211	—, Dengue	183, 186, 321, 380	Hugo, J, Capt, I M S, Encysted Calculus	355
Criminal Abortion	252	—, Enteric, <i>q r</i>			
<i>Criminal, The</i> (H Ellis)	71	—, Malarial, <i>q r</i>		I	
Crime in Insanity, Even's	224	—, Tertian	131		
Cultivation, New Method of, Rost	390	—, Typhoid, <i>q r</i>		Ice as a Conveyer of Disease	104
Current Literature		Flens and Plague	184	Immunity to Malaria	329
—, Bacteriology (L ROGERS)	445	Filaria, Identity of Diurna and Nocturna		Immunity, Ehrlich's Theory of	471
—, Biology (S P JAMES)	194	—, List of		<i>Impotence, Sexual</i> (Veck's)	110
—, Foreign (W D SUTHERLAND)	329	Filaria in Calcutta Police		I M S Dinner in London	345
—, Obstetrics (K N DAS)	287	— of Pelvic Lymphatics		—, Lord Roberts on	390, 410
—, Special Senses (F P MAYNARD)	35, 73, 195	— Surgical treatment of		— Uniform	364
—, Surgery (D M MOIR)	446	Fistula Urinary Case of		Indian Cigars	341
D		<i>Food Analysis</i> (Leffmann and Beam)		Indigenous Drugs	171, 193
Daley F J, Mily Asst Surgeon, Medico legal Statistics	246	Foulkes I H, Capt, I M S, Experiences in China		Intestinal Sand (Bedford)	274, 381
—, Weights of Viscera	56	<i>Formulary Pocket</i> (Freyberger's)		Insects and Cholera	401
Das, L, Asst. Surgeon, Wound of Abdomen	179	Fracture of Femur (Chatterton)		Inoculation Campaign in Punjab	357
Davies, A M, Lieut. Col, R A M C, Mutability of Bacteria	144	— of Skull (Rost)		—, Cholera	371
DECOMPOSITION	251	Franklin B, appointed D G		— Plague	372
Dob Tarannath Abdominal Wound	139	Freyer, P J	67, 140, 192 326, 363	Iridectomy, Involuntary	114, 115, 196, 292
Delhi Durbar Hospitals for	374	Fullerton, Wm, a pre service Surgeon	44	Irrigation and Malaria	181
Dengue and Mosquitos	183, 322			Italian Eye Surgery	403
—, Cases of	186, 350	G		J	
Denny, G W P, Lieut Col, I M S, Gastrostomy	16, 29	Gajjar Prof T K, Iodine treatment of Plague	134	James, C H, Capt., I M S, Rupture of Spleen	221
<i>Dentistry, Amateur, for Vaginal</i>	191	Gannanet, Dr, Experiment with Tuberculosis	358	—, S P, Capt., I M S, Pamphlet on Malaria	184, 290
Dhoby's Nut Therapeutics of	88	Gastrostomy, 55 rupees removed (Donny)	16, 29	—, Splen,	439
<i>Diagnosis, Physical</i> (Gibson's)	327	Gangrene, Case of	138	Enlargement of	439
<i>Dictionary Medicine</i> (Quain's)	161	Gibbons J B Lt Col, I M S, the Asphyxia of Drowning	297	Jails, Health of, Bengal	107, 449
—, Dorland's Illustrated	152	Giles, G M Lt Col I M S (ret'd)	188	—, Sanitary Commissioner's Note on	61, 449
Directory A Medical, for Bengal	103	<i>Handbook of Mosquitos</i>	140, 181	—, Stool Inspection Chamber for	167
Disinfection in Plague	166	<i>Constitutional Arthritis</i>		—, Tuberculosis in	421, 442
Dropsy, Epidemic, in Calcutta	268	<i>Gonorrhoea</i>		Jigger Cases, detected at Bombay	77
— in Madras	363	<i>Gonorrhoea</i>		Journal of Military Surgeons, U S A	26, 106, 317
Duer, C, Capt, I M S, Atony of Bladder	394	<i>Gonorrhoea</i>		— of Obstetrics, The	107
—, Hernia, Radical Cure of	170	<i>Gonorrhoea</i>		— of R A M C, Proposed	360
—, Lymphatic Glands	58	<i>Gonorrhoea</i>		K	
—, Typhoid in Natives	292	<i>Gonorrhoea</i>		Kala-azar, Deaths from	373
Duncan, Andrew (I M S, ret'd), A Phase of Cholera in India	148	<i>Gonorrhoea</i>		—, Note on (Dodd's Price)	379
Dutt, A C, Leprosy and Anihum	178	<i>Gonorrhoea</i>		—, Serum Reactions in	377
E		<i>Gonorrhoea</i>		—, supposed identity with Malta Fever	337, 425, 458
<i>Earth and Contagia</i> (V Poopo)	445	<i>Gonorrhoea</i>		—, The Illness of the	358
Education in India New Journal	362	<i>Gonorrhoea</i>		—, W G, Lt. Col I M S, Introduction of Vaccination into India	413
— of Army Medical Officers	441	<i>Gonorrhoea</i>		L	
Egypt, Medical School in	320	<i>Gonorrhoea</i>		Lamb, Geo, Capt, I M S, on Pathology of Scoury	103
—, Stone in	399	<i>Gonorrhoea</i>		—, on Snake	145
Elophantiasis, Operations for	371, 457	<i>Gonorrhoea</i>		—, on Typhoid	
Elliott, R H Capt, I M S, Notes from Fye Clinics	323, 381, 402, 442, 480	<i>Gonorrhoea</i>		in Natives	48
Ellis, Havelock, <i>The Criminal</i>	71	<i>Gonorrhoea</i>		Larvicides, Future of	412
Enchondroma of Submaxillary Gland	94	<i>Gonorrhoea</i>		<i>Laryngology in General Medicine</i>	153
Enteric Fever (see Typhoid)		<i>Gonorrhoea</i>		<i>Luth, Indiscriminate use of</i>	241, 23
— among Natives, 6 48, 77		<i>Gonorrhoea</i>		<i>Legal Medicine</i> (Collis Barry's)	406
—, 107, 291, 314 360, 452, 453		<i>Gonorrhoea</i>		Leprosy and Anihum	178
— in Cavalry Soldiers	185	<i>Gonorrhoea</i>		—, Introduction of	63, 318
—, Report on, McCulloch's	288	<i>Gonorrhoea</i>		— in Bikaneer	402
—, Sewage Disposal and	397	<i>Gonorrhoea</i>		Leucocytosis in Plague	331
Epidemic Dropsy in Calcutta	268	<i>Gonorrhoea</i>		List of Medical Practitioners (Bengal)	103, 284, 290
— in Madras	363	<i>Gonorrhoea</i>		Liston, W Glen Capt, I M S, Mosquitos and Malaria	114, 127
Ehrlich's Theory of Immunity	471	<i>Gonorrhoea</i>		Lithotomy	311
Ewens, C F W, Capt, I M S, Crime in Insanity	224	<i>Gonorrhoea</i>		—, Suprapubic	115
—, on		<i>Gonorrhoea</i>		Lithotripsy (H Smith)	57
Melancholic Stupor		<i>Gonorrhoea</i>		Liver Abscess, Treatment of	112
Evidence, Medical, in India	239	<i>Gonorrhoea</i>		—, tropical	196
EYESIGHT IN THE ARMY	141	<i>Gonorrhoea</i>		—, as a cause of Jaundice	391
Eye Clinics, Notes from (Elliott)	323, 364, 402, 442, 482	<i>Gonorrhoea</i>		—, Hemorrhage from	371
		<i>Gonorrhoea</i>		—, Yellow atrophy of	370
		<i>Gonorrhoea</i>		Liverpool School of Tropical Medicine	64 69, 70
F		<i>Gonorrhoea</i>		London Letter (K McLeod)	23, 63
Famine, Effects of, in Gujarat	77	<i>Gonorrhoea</i>		—, 102 143, 182, 278 318, 358, 398, 438, 478	
Foot, Perspiration of	159	<i>Gonorrhoea</i>		Lymphatic Glands in Rangoon	57
		<i>Gonorrhoea</i>		— (Climatic Buboes)	257

	Page		Page		Page
M					
Maddox, R H, Capt, I M S, Case of Scarlet Fever at Rauboi	470	Mohroof, Feroz Din, Reversed Peristalsis	394	Polyclinic, Report of	182
Madras Branch, B M A	106,	Moore, Malcolm, Major, I M S, Cere- bro spinal Fever	125	Poisoning in Calcutta	207
—, Epidemic Dropsy in	363	Morphia Habit, Cure of (Jennings)	112	— by Chlorodyne	306
—, Medical College Staff	362	Mortality in Typhoid, Statistics	400	Port Blair Medical Society	363, 407
—, Report	369	Mosquitos (see also Malaria)		Poore, V, <i>Birth and Contagion</i>	445
Mahamari or Plague	263	—, Anatomy of	197	Powell, A, Medical Examination in Rape Cases	230
Mutland, J, Lt. Col, I M S (Asso- ciate Editor)		—, Anopheles and no Malaria	105, 437	— on Chlorodyne poisoning	306
—, Amputa- tion of Upper Extremity	136	—, Destruction of	65	Practice, private, The right of	47
—, Filariasis	313	—, <i>Giles' Book on</i> , 149, 181, 188,	285	Prasad, K, Maj, I M S, Table of Ulcers	66
—, Large		—, in Nigeria	69	Procidencia Recti (Moir)	303
Hydrocele	274	—, Objections to Theory	36, 114	Promotion of Specialist Medical Officers	291
Abscess, Treatment of	113	—, Role of, in Tropical Pa- thology	127	<i>Prostrate, Lectures on</i> , P J Froyer	326
toma, Pathology of	417	War against (R Ross)	107, 356	—, Extirpation of 149,	182
Malaria, absent, with anopheles present	65, 105	Yellow Fever and	149	Price, Dodds, Dr, on <i>Kala azar</i>	379
—, A problem of	65	Murison, C C, Lieut, I M S, Case of Gangrene	138	Prickly heat as an infective disease	361
—, Coma in	412	—, Snake	171	Pridmore, W G, Capt., I M S, on Dengue	380
—, Cachexia, Nature of (Rogers)	424	bito Cases		—, voluntary Iridectomy	114
—, Cancer and	65, 186	Murray, R D, Lieut Col, I M S, Ope- rations for Elephantiasis	457	—, on	
—, Conference at Nagpur	74, 81, 439	Muston, William Pitts	197	Dysentery and Shiga's Bacillus	278
—, COMMISSION, PRELIMINARY RE- PORT OF	101, 439	Mycetoma, Pathology of (Martland)	370	<i>Public Health</i> (Lewis and Balfour)	406
—, ON ENDEMICITY OF				<i>Pulse, Study of</i>	287
MALARIA	437	N		Punjab, Plague Campaign in	357
—, in Hong Kong	412	Nagpur Malaria Conference, 29, 74, 81, 145, 439			
—, Inoculation against	329	Natives, Typhoid among, 6, 48 77 107, 291, 314, 369, 452, 453		Quain's Dictionary of Medicine	151, 182
—, IRRIGATION AND	181	<i>Nasal Discharges, Purulent</i>	325	Quarant Fever, Cases of	83
—, James, S P, Capt., Pamphlet	184	<i>Nerves, Healing of</i>	111	Quinine, Hypodermic use of	290, 429
—, Mosquitos and (see Mosqui- tos)		<i>Nervous Diseases</i> (Potterson's)	190	—, Prophylactic use of	402, 408, 449
—, Nomenclature of	182	—, <i>Lecons Sur</i>	285		
—, Prevention of (Birdwood)	81	Novo, L F, Cancer in Kashmir	164	R	
—, Treatment by Quinine hypoder- mically	280	Newman, E. A R, Capt, I M S, Cancer in Bhagulpur	392	R. A M C, The	63, 319
Malay States, Research Institute	108	—, Cerebro spinal Fever	340	—, Journal of	317, 340
Malta Fever in United States	149	Niblock, W J, Capt., I M S, Ampu- tation of Scapula	95	Rangoon, Cerebro spinal Fever in	67
—, or <i>Kala azar</i> , 337, 363, 377, 379, 402		—, Cancer	161	—, Dengue in	186, 321, 380
Manson, P T, Dr, Death of	187, 279	—, in India	161	—, Lymphatic Buboos in	58
<i>Massage, Lessons in</i>	72	—, cure of Hydrocele	121	Rape, Medical Examinations in	230
—, in <i>Fractures</i>	368	Night-blindness	402	<i>Remedies, Rough notes on</i>	156
Maynard, F P, Major, I M S, Current Literature	35, 73, 195	<i>Nothangel's Encyclopedia</i> , Vol 1	365	REMITTENT, THE TERM APPLIED TO	
—, on In		<i>Nose, Accessory Sinuses of</i>	109	FEVERS	141
—, voluntary Iridectomy	115	<i>Nursing, Obstetric</i>	191	Reports, Annual A M D for 1900	359
—, Inspection Chamber	157	O		—, Assam, Dispensary	333
Medical History of Japan China War	105	<i>Obstetrics, Text book</i> (B C Hirsch)	153	—, Sanitary	372
Medical Society, Bombay	75, 331	—, and <i>Nursing</i>	101, 327	—, Vaccination	492
—, Port Blair	407	Opium poisoning, Case of (F J Daley)	115	—, Bengal, Dispensaries	451
<i>Medicine, Legal</i> (Collis Barry's)	405	Ophthalmic Clinics, Notes (Elliot)	323, 364, 402, 442, 479	—, Sanitary	371
<i>Medicine, Practice of</i> (Anders)	189	<i>Ophthalmic Optics</i>	111	—, Vaccination	411
—, (Lockwood)	189	<i>Ophthalmology, Military</i> (Yarr)	327	—, Bombay Hospitals	156
Medico-legal Number, Announcement of	28, 143	<i>Oster's Medicine</i>	70	—, Sanitary	76
—, (June)	201 to 236	P		—, Burma Hospitals	491
—, (August)	297 to 306	Palato, Cleft, Rare in India	370	—, Central India	193
—, Notes	230, 244, 246 275, 373	Paratyphoid	185, 402	—, Hong-kong, Medical	412
MEDICO-MILITARY JOURNALS	26,	<i>Pathology</i> (Hokteon's)	328	—, Hyderabad Assigned Districts	194
Melancholic Stupor, Cases of	106, 317	Pastilles for killing Mosquitos	149	—, India, Sanitary Commission	192, 281
Meningitis (see also Cerebro-spinal Fever)	331	Peace, The	318	—, or's	
—, Kernig's sign in	321	Pellagra, ever observed in India ?	282, 289	—, Madras, Hospitals, General	309
<i>Menstruation and its Disorders</i> (Giles)	191	Peristalsis, Reversed, Cases of	394	—, Hospitals	450
Methylene Blue in Dysentery	331	Pilgrim Centres, Sanitation of	371	—, Maternity	289
Midwives' Bill, The	280	<i>Pharmacology and Therapeutics</i> (Hale White)	33	—, Sanitary	453
—, <i>Manual for</i> , in Bengali	112	Plague, Alipore Jail, Outbreak	149, 441	—, Vaccination	492
Milne, C J Robertson, Capt, I M S, Poisoning in Calcutta	207	—, Campaign against, in Punjab	357	—, Persian Gulf Report	493
—, to investigate Cerebro spinal Fever	361	—, Clotting of blood in	92	—, Punjab Hospitals	491
—, on Setons in Backergunge	316	—, Disinfection in	166	—, Vaccination	491
Mittra, A, Dr, Pamphlet on Plague	402	—, Iodine Terechloride in	134	Rajputana, Medical	493
Moir, D M, Major, I M S, a Leg Splint	273	Map of	183	Report on Enteric (McCulloch's)	288
—, Liver Abscess		<i>Mahamari or</i>	263, 283	Roberts, Earl, on I M S	399, 415
—, causing Jaundice	391	Mittra's pamphlet on	402	Robertson, D, Major, I M S, Cases of Enchondroma	94
—, Recti	353	Report of Commission	23	Rogers, L, Capt., I M S, M D, Epi- demic Dropsy	268
Mohroof, Feroz Din, Ligature of Vas Deferens	137	Transmission by fleas	184	—, Disinfection in Plague	166
		Unusual form of	92	—, Is "Malarial Cachexia"	
		Urdu pamphlet on	402	Malarial ?	424
		Value of Iustig's Serum in	27	—, Serum reactions in Ma- laria	
		Virulence of, in Bombay	28	—, Snake Poison Venom	377
		<i>Physiology</i> (Raymond's)	190	—, Tsetse Fly Disease and	445
		—, Practical (Schaefer)	329	Surra	401
				—, Typhoid in Natives	6
				Rontgen's Rays, see "X Rays"	
				Ross, Ronald, Cercomonads in Ulcers	157
				—, War against Mosquitos	35
				Rost, E R, Capt, I M S, A New Cul- ture Method	390
				—, Beri beri experiments	270
				—, Compound Fracture, Skull	59

	Page		Page		Page
Rost, E. R., I M S., Operation for Enlarged Spleen	356	Stupor, Melancholic, Cases of	381	V	
Rupees 55 removed from stomach	16	Sudden deaths in Calcutta	301	Vaccination and Small pox in London	103
S		Sunder, C. E., Major, I M S., Supra pubic Lithotomy	115	— (centenary of, in India)	413
Sand, True Intestinal (Bedford)	272, 381	Surgeons, Pre service D G Crawford, I	41	— Imperial League	308
Sanders' Prize Essay, The	447, 487	<i>Surgical Treatment, Manual of</i>	234	— Modified Compulsory	411
Sanitation of Mofussil Bazaars	282	Surra, Outbreak of Grieg	50	— Reports	411
Scottish Widows' Life Fund Society	367	— in Philippines	188	<i>Veterinary Pharmacopoeia</i> (Holmes)	407
Scarlet Fever, Case of, at Ranchi (Maddox)	470	— Tsotse Fly Disease and	401	Viscera Weights of, Table	50, 254
Scurvy, Pathology of (Lamb)	103	Sutherland, W D, Major, I M S., Foreign Extracts	329	Vision in the Army	141, 157
Sen, H. L. C., Therapeutics of Dhoby's Nut	88	— Medico legal Notes	244	Volcanic Eruptions in West Indies	280
—, Gurunath, Indigenous Drugs	171	Symons, T H, Capt., I M S., Case of Pneumonia	131	W	
<i>Senn, Nicholas, Surgery</i>	366	<i>Syphilis and Venereal Disease</i> (DE MERIC)	34	Warrant, The New R A M C	278
Service, I M S., Dinner at Nagpore	75	— in Native races	149	<i>Water and Water Supplies</i> (Thresh)	32
— Notes, 36, 79, 115, 158, 197, 256, 296, 334, 374, 414, 454,	494	Syphilitic Fever	16	Water Sores, <i>pani ghao</i>	78, 362
Serum Reactions in Malaria, &c	377, 402	— Pleurisy	97	Water supply of towns	451
SEWAGE DISPOSAL AND ENTERIC	397	— Treatment, Aix la Chapelle	351	Waters, D., Capt., I M S., Port Blair Medical Society	303
Shiga's Bacillus of Dysentery	186, 277	Swamy Naick introduces Vaccination into Madras	413	— Tuberculosis in Jails	421
Shukare, P W, Cocaine in Minor Surgery	59	T		Weights of Viscera, Tables	56, 254
Silcock, A., Lt. Col., I M S., Case of Hydatid	473	Tonic, are they toxic?	331	White Chaytor, Major, I M S., on <i>Ma hamari</i>	263
Sinnatamby, M., Dr., Thyroid and Convulsions	53	Taylor Prize, The	144	— on unusual form of	92
Simple Continued Fever	107	Therapeutic Notes, 40, 120, 160, 200, 296,	376	Plague	
Sinclair, G., Dr., Wound of Abdomen	180	Therapeutics, The New (O'Gorman)	157	Williamson J Rutter, Dr., Cases of Cerebro-spinal Fever	94
Singh Purna Chander, Medico legal Notes	234	Thrombosis of Artery	476	— on Cerebro spinal Fever	361
Sleeping Sickness in Uganda	187	Thyroid Gland in Convulsions	53	Wilson, Horace Hayman	25
Small pox in London	102	Thumb Impressions, Forgery of	255	<i>Woman, Diseases of</i> (Penrose)	110
— in Bengal	372	Toxicological Experiences (Bedford)	202	Worms, Screw, in Maxillary Sinus	78
Smith, Browning, Capt. I M S., Cerebro spinal Fever	359	Tropical Diseases, New Books on	187	Wounds of Abdomen	139, 179, 180
— Hydatids, Case of	390	Trypanosoma in Man	300, 320	Wright, F W, Lt Col, I M S., Enteric in Natives	67
Smith, Henry, Major, I M S., on Perineal Lithotomy	57	— in Surra	50	Wright, Hasell, Capt., I M S., Syphilitic Fever	96
Snake-bite, Cases of	100, 171, 474, 475	Tsetse Fly Disease and Surra	401	X	
Snake Venoms	145, 445	Tuberculosis in Indian Jails	421, 442	X Rays in Medical Work (Walsh)	196
Societies, Medical	75, 331, 407	— Dr Garnault's Experiments	353	— (Williams)	285
Spleen, Rupture of, Crawford on	211	Typhoid (see also Enteric)		— (Turner)	482
— James on	221	— among Natives, 6, 48, 77, 107, 291, 314, 369, 452, 453		Y	
— Operation for Enlarged	356	— <i>De novo</i> Origin of	144	Year Book of Scientific Societies	72
Splint, A new leg (Moir)	273	— in Algiers	107	— of Surgery	285
Stevens, A F, Capt., I M S., The use of the <i>lath</i>	241	— Mortality from	400	Yellow Fever Expedition	361
Stokes, T G N, Lt, I M S. on Typhoid in Natives	77	— in Cavalry Soldiers	184, 288	Z	
Stomach, Perforation of	246	— Woodbridge Treatment of	132	Zoology, Text Book of (Mudges')	111
Stone in Bengal	311	— McCulloch's Report on	288		
— in Egypt	390	U			
— in Germany	283	Uganda, Sleeping Sickness in	187		
Street, Ashton Major, I M S., Operation for Aneurism	98	Ulcers, Diagnostic table of	66		
		— Malarial (?)	149		
		Uniform of an Army Medical Department	415		
		United Provinces, Hospitals	76		
		<i>Urine Analysis</i> (Bedford's)	150		

Original Articles

PRE-SERVICE SURGEONS

D G CRAWFORD, M B,

LIEUT COL, I M S,

Civil Surgeon, Hughli

Notes on the Medical Officers serving the Company prior to the formation of the medical services

IN a former article entitled "Notes on the History of the Bengal Medical Service," published in the *Indian Medical Gazette* for January and February 1901, I gave a summary of the history of that service, from its foundation on the 1st January 1764 to date, with short notices of the three most famous Surgeons serving before that time, Boughton, Hamilton and Holwell. The present article is an endeavour to give a brief sketch of the Surgeons serving before 1764, with some notes on medical matters in general up to the same date. For the period from 1684 to 1717 I have been able to extract a quantity of information, chiefly from Wilson's "Early Annals of the English in Bengal,"¹ and Colonel Yule's notes to the Diary of William Hedges, Governor of Bengal, from 1682 to 1684.² For the period from 1748 to 1766 also I have been able to collect a good many notes from Long's "Early Records,"³ Bloome's History of the Bengal Army,⁴ the Consultations of the Council of Fort William, 1753-1759, and other sources. For the thirty years, from 1718 to 1748, I have hardly any information, except about Holwell, and what I have been able to gather from the Parish Register of St Anne's⁵ from 1715 to 1758. This register records only births, marriages, and deaths. It contains the names of forty-one Surgeons, but many of these are noted as Surgeons of ships

lying in the river, some of these also, who are not specially so described, and whose names I have given, may have been ship Surgeons also. Almost all the English ships, however, which then visited Calcutta, were in the service of the East India Company, and, as some of these notes show, there was a frequent interchange of duties between the Surgeons of ships in the Europe trade, and those serving in the Company's factories in India. There was then no furlough for the Company's servants in India, a man who wished to revisit Europe had to resign the service, though he might be, and apparently, if he wished it, usually was reappointed on his return. The cost of a passage to England was then a very large sum, so medical officers found it a convenient and cheap way of going home to take the appointment of Surgeon to an Indiaman for the homeward voyage, when the Surgeon who came out on the ship was willing, as was often the case, to take an appointment in India.

As in my former article, these notes refer chiefly to Bengal, though several medical officers serving in the other Presidencies are mentioned.

Abel Price—The first Surgeon in the Company's service whose name I have come across ended his career and his service on the block. In February 1623 the Dutch captured the English Factory, belonging to the London E I Co, at Amboyna, on the island of Ceram, in the Malay Archipelago, between Celebes and New Guinea. Most of the prisoners, including ten Englishmen, one Portuguese, and nine Japanese, were beheaded, among them Abel Price, Surgeon. The lives of a few of the prisoners were spared. Dryden wrote a tragedy on the subject of the massacre at Amboyna (Bruce, Vol I, pp 246-248).

The next Surgeon in the Company's service, in point of date, whose name I can give, was the famous *Gabriel Boughton*. In my previous article I gave the story of his services to the Company, and how, after his cure of Shah Jahan's daughter, he obtained, as a reward for his services, liberty for his employers, the E I Co, to trade with Bengal, as it is usually told. I regret to say that there appears to be little truth in the Boughton legend, though it appears in one history after another, and indeed, was current in Bengal within a quarter of a century of Boughton's death.

Bruce, in his "Annals of the East India Company" published in 1710,⁶ gives the story as follows (p 406) —

"The Surgeons of the English Indiamen had acquired, for their skill in curing the disorders

¹ "The Early Annals of the English in Bengal being the Bengal Public Consultations for the first half of the Eighteenth Century," summarized, extracted and edited, with introductions and illustrative addenda by G R Wilson. M A Bengal Educational Service. London W Thacker & Co. Vol I, 1896, Vol II, Part I, 1900.

² "The Diary of William Hedges, Esq (afterwards Sir William Hedges) during his Agency in Bengal as well as his voyage out and return overland (1681-1687)." Transcribed for the Press with introductory notes, &c, by R Barlow, Esq, and illustrated by copious extracts from unpublished records, &c, by Colonel Henry Yule, R E C B L L D, President of the Hakluyt Society. Vol I. The Diary with Index. London. Printed for the Hakluyt Society, Lincoln's Inn Fields. W O 1887 Vol II, 1888, and Vol III, 1889, Illustrative Documents.

³ "Selections from unpublished records of Government for the years 1742 to 1787 inclusive, relating mainly to the social condition of Bengal with a map of Calcutta in 1784." Published under the sanction of the Government of India, Calcutta, Office of Superintendent of Government Printing, 1869 Vol I. (Second volume never published but the work was continued by Seton Kurr in five volumes.)

⁴ "History of the Rise and Progress of the Bengal Army" by Captain Arthur Broome, Vol I. Calcutta W Thacker & Co 1850. (No more volumes were ever published.)

⁵ St Anne's, the first Church in Calcutta, completed in 1709. It was situated to East of old Fort William, and was destroyed at the capture of Calcutta in 1756.

⁶ "Annals of the Honourable East India Company from their establishment by the Charter of Queen Elizabeth, 1600, to the Union of the London and English East India Companies 1707 &c," by John Bruce, Esq M P and F R S, Keeper of His Majesty's State Papers, and Historiographer to the Honourable E I Co, London. Printed by authority of the Honourable Court of Directors, by Cox, Son and Baylis Great Queen Street, and published by Black Parry, and Kingsbury, Booksellers to the Hon'ble E I Co, Leadenhall Street, 1810. Three volumes.

of the principal Mogul officers, a reputation, which made them known at court. Assalat Khan, a nobleman of high rank, applied to the Presidency of Surat to recommend a Surgeon to reside at Agra, and they selected Mr. Gabriel Boughton, Surgeon of the Company's ship *Hopewell*, for that duty, who was afterwards appointed Surgeon to the Emperor. His success gave the English an influence in the Mogul's Court, which in the sequel, we shall find to be the source of the valuable privileges which the London Company acquired in Bengal.

The date of Boughton's deputation to Agra is put by Bruce in the year 1644-45. It will be seen that Bruce makes no mention of the accident to the Emperor's daughter.

Stewart, in his "History of Bengal,"¹ published in 1813, gives (pp 251-252) the story at greater length than Bruce, and introduces the usual embellishments. He gives the date as 1636 (1046 by the *Hijra* era), and tells the story of the daughter of Shah Jahan being badly burned in the Emperor's camp in the Dekkan, and cured by Gabriel Boughton, Surgeon of the *Hopewell*. He further states that Boughton asked, as his reward, liberty for the English to trade in Bengal, that he went overland to Pipri, and there started the first English factory in Bengal, with the aid of "an English ship happening to arrive in these parts." Stewart further states that Boughton proceeded to the court of Shah Shuja, the Emperor's son, Viceroy of Bengal, at Rajmahal, and there also cured one of the ladies of the harem.

On the subject of the *farman*, said to have been given by Shah Jahan to Boughton in 1636, Stewart writes "I was not able to find a copy of the *farman* among the Indian records, but Mr. Bruce mentions that it is in the State paper office, and is dated 2nd February, 1633-34." In another foot-note at the same place (pp 251-252) he writes "See East India Records, Vol XIV, p 22." Yule (Vol III, p 183) says of this reference in 1889 "Nothing corresponding to this reference can now be traced in the India Office."

Colonel Yule in his notes to Hedge's Diary devotes a good deal of space to the legend of Gabriel Boughton. After quoting (Vol III, pp 167-168), the account given by Stewart, he says, that this is the earliest version of the story in its completeness which he has been able to find, and that he cannot trace it to any older authority. Dow, in his "History of Hindustan,"² published in 1772, gives the story of the accident as occurring in 1643, which is about the time

when Gabriel Boughton went to Agra, but does not mention him as having any thing to do with it, on the contrary, he says that the girl was cured by Anitulla, the most famous physician of the age, who was brought express from Lahore for the purpose. The mission of Boughton, and the fire accident to the lady, appear to have got mixed up, and the accident located in a camp in the Dekkan, on account of the obvious improbability of a Surgeon from Surat reaching Agra in time to be of any use.

Yule also (Vol III, p 183) quotes the legend of Gabriel Boughton as follows—

"I also find from a MS discourse by J B, a Captain of a Company's ship, who was in India circa 1770-1780, (which I have seen just as this sheet is going to press, and which I have the owner's permission to quote,) that the story of the acquisition of privileges for his countrymen by Gabriel Boughton (there called Bowden) was then current, though some of the particulars are given differently. Indeed, this MS curiously illustrates the inexactitude of even twenty years' tradition. For it seems impossible that Mr. Jumla, who did not come to Bengal till 1759, should have been the Mahommedan patron from whom Boughton (who died some years earlier) obtained trading privileges for his countrymen.

"The passage in J B's MS runs as follows

"In the before mentioned places in these three kingdoms (ORISSA, BENGALA, and PATTANA, i.e., Behar) the English nation in general hath freedome of inhabiting and trading, free from all manner of taxes and customes, in or out, the like priviledges hath noe other Nation besides.

"All which was procured by the Ingenuitie of Mr. GABRIEL BOWDEN (one of our owne Nation) and a very eminent Doctor of Physick, sometime Doctor in Ordinary to the great WARRIOR EMIR JEMIA, who took a very great affection towards him and was most courteous and free to him, and especially upon a Notable Cure of his owne Lady performed (Under God) by the Doctor, the Nabob callinge for him ordered him att that instant to demand what he would have given him or had most likeinge to, and it should be granted in consideration of his loyal service and care of the best of his familie. The Doctor highly surprised with this great Person's generositie, soone considered upon it, yet soe as not to be greedy of any present Gaine (onely for himselfe) and now in the best of time, requested that the ENGLISH Nation might settle factories in what parts of the Kingdomes they pleased and be free off all duties and customes, which was then 4 percent in and the like out for all the goods dealt in, the which was noe sooner demanded but

¹ "The History of Bengal, from the first Mohammedan invasion until the virtual conquest of that country by the English, A.D. 1757"—by Charles Stewart. London: Black, Parry & Co., Lendenhall Street, Booksellers to the Hon. E. I. Co. Watts, printer, Buxbourn 1813.

² "The History of Hindustan from the earliest account of time to the death of Akbar, translated from the Persian of Mahommud Casim Ferishta of Delhi together with a dissertation concerning the religion and philosophy of the

Brahmins, with an appendix containing the history of the Mogul Empire in its decline in the reign of Mahommud Shaw to the present time." By Captain Alexander Dow, 3 vols., 4^o London, 1768—1772 (an Earlier Edition, in two volumes, was published in 1768).

as readily granted, with *Phyrmands* in the PERSIAN Language that the ENGLISH Nation should hold that Privilege soe longe as they pleased to live and settle in these Dominions, and many other rewards Liberally bestowed upon the Doctor (one being very rare among the Mahometants)"—But here this part of the MS breaks off

What is really known about Boughton is given by Wilson (Vol I, pp 23-28) Gabriel Boughton was sent from Suat to Agia in 1645, at the special request of Asalat Khan, a nobleman at Shah Jahan's Court, acquired great influence by his professional services, and stood high in favour with the Emperor's son, Shah Shuja, whom he accompanied to Bengal when he was appointed Viceroy. The accident to Shah Jahan's daughter, the Princess Jahanara, by her clothes catching fire happened in 1643-44, more than a year before Boughton reached Agia.

It is doubtful whether Boughton secured any grant for the English. We last hear of him as alive in 1650. Bruce states (I, 56) that Shah Shuja gave the English a *farman* in 1651-52. The original document was lost by Mr Waldegrave in a journey overland from Bengal to Madras. A copy is dated 1656.

On the whole, it appears probable that Boughton did get a grant, not from Shah Jahan, but from Shah Shuja. But even this is by no means certain.

Whether Boughton ever did anything for the Company or not, it is quite certain that they entertained great hopes of his doing so. Yule (III, 187) quotes a letter from the Masulipatam Agency, sending a *peshkash*, or propitiatory offering, to Boughton, for his favour at Shah Shuja's court. Yule also (III, 188) quotes a letter from home to the Council of Fort St. George, dated 31st December 1657, which states that Boughton's widow, having married William Pitts, a servant of the Company stationed at Hughli, is making claims against the Company, which they repudiate.

Both Bruce and Stewart describe Boughton as Surgeon of the *Hopewell*. Whether he was on the *Hopewell* or not, this ship, curiously enough, is connected in quite a different way, through a different individual, with the first visit of the English to Bengal. In March, 1663, John Norris, Agent at the English Factory at Masulipatam, despatched a party of eight Englishmen in a country boat to the Court of Agha Muhammad Yaman, Viceroy of Orissa, who gave them permission to trade in Orissa, and under this permission they founded factories at Balasore and Hariharpur. One of this band of eight, the first Englishmen to visit Bengal, or at least Orissa, was William Bruton, Quarter-master of the *Hopewell*, who wrote an account of the expedition.¹

¹ "News from the East Indies of a voyage to Bengalla," written by William Bruton, now resident in the Parish

A list of the Company's servants on the Coast (Madras), and in the Bay (Bengal), in 1652, probably the oldest such list in existence, shows two medical officers. At Madraspatam—Edward Whiting, Chyrurgeon. In Pegu—Samuell Archer, Chyrurgeon (Yule III, 196).

John Fryer, M.D., travelled in India and Persia as a Surgeon in the Company's service from 1672 to 1781, and wrote an account of his travels published in London in 1698 in a large folio volume.

Ralph Harwar is mentioned as resigning in 1676 and being succeeded by Robert Douglas. Yule (II, 125) quotes from Streynsham Master's Diary as follows: "Dec 15th, 1676, RALPH HARWAR, Chyrurgeon of this factory (BALASORE), desiring to return home for England by these ships, and Mr ROBERT DOUGLAS, the Chyrurgeon of the *Eagle* being willing to accept of this employment, and Captain BONNILL, his commander, consenting that they should change both, the Council did also approve thereof." Hedges mentions Harwar as being again in Bengal, in Hughli, in his diary on 27th August 1784, and again mentions him on 25th and 27th November 1784. Apparently he came out again, after a spell at home, and succeeded Douglas, his former relief, in turn.

Robert Douglas came out as Surgeon to the *Eagle*, in which Streynsham Master came to Bengal in 1676, and, as mentioned in the last paragraph, succeeded Ralph Harwar as Surgeon at Balasore and Hughli. He went in largely for private trade. Hedges mentions him as a habitual trafficker with interlopers, for which he was dismissed in 1684. He joined Hedges in chartering the *Recovery* for the Persian Gulf, and left in her with Hedges at Christmas 1684, going home overland from the Persian Gulf *via* Baghdad. Douglas appears subsequently in 1699 as supercargo of the *Mucclesfield* galley, sent by the new (English) Company to China. His wife was a sister of the wife of Thomas Pitt, the famous interloper, Governor of Madras, from 1697 to 1709, importer of the Pitt Diamond and grandfather of William Pitt, Earl of Chatham.

Henry Watson, a letter from Court dated London, 26th November 1684, makes the following appointment: "Mr Henry Watson is likewise entertained to serve as, as a Chyrurgeon's mate at Hughli or Cassumbazar (where there is most need of him) for five years and 30 is a month for the first two years and 30 is a month for the last three years."

The New Company sent out their first batch of servants to occupy Hughli, abandoned by the Old Company after the foundation of Calcutta by Job Charnock in 1690, in the *Antelope* in

of St Saviour's, Southwark, and now lately come home in the good ship called the *Hopewell* of London, imprinted at London by I. Oakes, 1648—(reprinted in Volume VIII of a collection of voyages and travels published by Osborne in 1752, and also in Vol V of the Enlarged Edition of Hakluyt in 1809—12)

1699 Between September and December 1699, no less than seventeen of the New Company's servants died, mostly in the *Antelope*, on the voyage. Among them were Fulk Lacey, Surgeon (apparently of the ship) on 5th September 1699, Henry Bigland, Surgeon's assistant, on 30th August 1699, and Thomas Pendleton, "our designed Chyrurgeon in the Bay," in December 1699 (Yule II 206)

Dr Heathfield is mentioned in Hedges' diary as Surgeon of Fort St George in 1685. He died about 1691.

Edward Bulkeley was appointed Surgeon to Fort St George, in succession to Heathfield, deceased, about 1690-91. He was a famous naturalist in his time. In 1698 he was appointed a Justice of the Peace. He remained in the service as Surgeon till 1708, in 1709 he was appointed "Land Customer" and sixth of Council, in 1710 he appears as Storekeeper and seventh of Council, in 1711-12 as Paymaster and fifth of Council, after which his name drops out of the list (Yule II, 320-321).

Bruce (III, 154) relates how the Moguls endeavoured to get possession of the Company's Settlements on the coast in 1693-94, through the treachery of *Dr Blackwell*, one of the Company's servants, from his name, I am sorry to say, apparently a Scotsman. "Fort St David, being the weakest was first thought of and the Surgeon of the place, a *Dr Blackwell*, who had, from his profession, got access to the Mogul's camp, became, for a large bribe, the instrument of the enemy, in return, he was to be made Governor of Porto Novo, and to hold it under the Mogul's protection. Blackwell's treason was fortunately discovered, and he was seized and carried to Madras, where he made a full confession." It is not stated what became of Blackwell. Apparently he was sent for trial to England. The Company had not then power of life and death over Europeans, so *Dr Blackwell* probably escaped the fate he so richly deserved.

William Warren came out as Surgeon to the Old Company in 1700-02, and was taken into the service of the United Companies on 16th February 1704, on a salary of £36 per year. He begs that the Old Company will not on that account stop his allowances as he still has 23 of the Old Company's servants to look after. The Old Company's Council agree that his stated salary may be allowed him, but no further benefits from the Old Company (Consultations of 22nd July 1704, Wilson I, 245).

The Revd B. Adams, Chaplain of Fort William, mentions Warren in a letter home, as follows: "That adulterous marriage of WILLIAM WARREN, Surgeon to the Factory at Calcutta, with ELIZABETH BINNS, a widow there, tho' admonish'd, caution'd and advised to the contrary, when she, and everybody that knew Mr WARREN knew also that he was married to another

woman, who would have come out to him, if he had had a mind to it. But it seems that the obligations of marriage, or anything else, are of little consideration with Mr WARREN, being a man of most pernicious principles and debauched manners" (Wilson I, 201). It is not clear how, under the circumstances, Warren got his marriage solemnized.

About the same time the Court, in a letter to Bengal, dated 16th December 1699, write "If Doctor WARREN be an industrious honest able man, we leave it to you to make his salary up to £36 per annum. We have not heard from his wife as yet, but whenever she desires it, we will give her leave to come over to him on our shipping" (Yule II, 330). Yule also quotes Mr Adam's letter, which is not dated. History does not relate whether Mrs Warren came to India or not. If she did, it would have been interesting to see the meeting between the three, and William Warren, whatever his sins, probably paid for them in full. In the list for December 1706, Warren is said to have "laid down the service" since the preceding year.

In June 1702 the New Company established a factory at Pulo Condore, off the Coast of Cochinchina, under Allen Catchpole as President. On the night of 2nd, 3rd March 1705 the Malays rose and murdered Catchpole, and several of the other English officers. Those who escaped on that occasion were almost all killed in a second massacre on 10th May, among them *St (Stephen?) Paul*, Chirurgeon (Yule II, 341).

In August 1705, a second Surgeon, *Michael Gray*, was appointed to assist *Dr Warren* in Consultations, August 20th, 1705. "The place Calcutta—and season being very sickly renders it impossible for one Doctor to attend all the sick, and that none may perish for want of due attendance in sickness, there being no mates nor assistants to *Dr Warren*, and he very sick, 'tis unanimously agreed that Mr Gray, who was Surgeon to Metchlepatam Factory for the New Company, be taken into the United Trade Service at the same salary that *Dr Warren* has, but *Dr Warren* to have precedence, having served the longest time in India."

Dr Lewis Demenny appears as witness to a will in Calcutta, of Mr John Masters, fourth in Council, on 1st November 1708. His name again appears as Surgeon to the *Howland*, which reached Calcutta on 30th December 1710.

Dr Phillip Richardson appears as receiving a legacy from William White, merchant, on 26th May 1710. His name is not in the lists from 1712 to 1715, he apparently went home and came out again, for *Dr Phillip Richardson*, the Factory Surgeon, and Mr John Parney, the Assistant-Surgeon, being both in very bad health, were given their discharge in order that they might try change of air on 11th January 1717.

James Richardson, Surgeon, resigned in January 1711. Possibly the Christian name

may be a mistake, and he may be the same as the Phillip Richardson mentioned in 1710 and 1717.

William James came to Bengal as Surgeon to the *Bouverie* on 13th January 1710, and was appointed Surgeon to the Settlement in succession to James Richardson in January 1711. He returned to England in February 1713. He was appointed to accompany the Embassy to Delhi, but did not go. In a list of the Company's servants in the Bay in November 1711 appear the following names —

William James—going up with the King's present

William Hamilton—at Calcutta (*sic*)

William Hamilton, the next name on our list, is probably the most famous name among all the medical officers who have ever served in India, and certainly is that of the Surgeon who has been the greatest benefactor of his country. The Boughton legend may be for the most part apocryphal, but there is no doubt of the truth of the story of William Hamilton. That story, as told in my former article, is, I think, in the main correct, except as regards the statement that Hamilton was detained by the Emperor at Delhi after the other members of the Embassy were permitted to return to Calcutta. Whatever difficulties he may have met with as to his being allowed to accompany the other members, he did accompany them. The Embassy on its return was received at Tribeni with great pomp, by the President, Robert Hedges, and four of his Council, about 20th November 1717. Hamilton died in Calcutta on 4th December 1717. He made his will, on the return journey, on 7th October 1717, at Sunjgarh, a small town on the south bank of the Ganges, twenty miles west of Monghyr. The will, which is given in full by Wilson (II, 293-294), is witnessed by John Cockburne and John Sturt. These names are not among those of the members of the Embassy, but they may have been those of men who accompanied the Embassy, when on its return journey, from Patna to Calcutta. That the Emperor may have desired to retain Hamilton's services as his personal physician, and that he was only allowed to leave on promising to return after a visit home, is probable enough. Indeed, the fact that he had difficulty in getting away is distinctly asserted on his tombstone, which is certainly a contemporary record "*ba hazar tasdi'a az Dargah-i-Jahan-panah rukhsat-i-watan-i-khud hasil namuda*". But it appears certain that he did accompany the other members of the Embassy on their return journey, his death taking place only a few days after their arrival in Calcutta.

William Hamilton belonged to the family of Hamilton of Dalzell, and came out to India as Surgeon of the frigate *Sherborne*. The whole ship's company appear to have been in a state of chronic mutiny. Hamilton was not on good

terms with the Captain, Henry Cornwall, and after standing by him in one mutiny, closed his naval career by deserting at Madras on 3rd May 1711. He made his way to Calcutta, and was there appointed Second Surgeon to the Settlement on 27th December 1711. "We being in great want of another Surgeon for to tend all the Honourable Company's servants and soldiers of this garrison, and William Hamilton being out of employ, agreed that he be entertained upon the same allowance and privileges as William James our present Surgeon" (Consultations 27th December 1711). In the list of salaries paid at Michaelmas 1712 appear the names of the two Surgeons

William James, Surgeon, half a year at	£36	Rs 144
William Hamilton do do	£86	Rs 144

The Surgeons came in the list of Company's servants between the factors and writers.

In 1714 was despatched the famous Embassy. In the Consultations of 5th January 1714, Mr John Surman was appointed chief of the Embassy, Mr John Pratt second, Mr Edward Stephenson third, with Hamilton as medical officer. "It being necessary one of our Surgeons go up with the gentlemen who go with the present, agreed therefore that Dr Hamilton be sent." Again—"Ordered that Rs 350 be allowed Mr Edward Stephenson and Rs 300 to William Hamilton to provide themselves with clothes, &c, necessaries for their proceeding to the Mogul's Court with the Present and that the Buxey pay the same" (Consultations 26th February 1714). Subsequently Pratt was excused, and "Coja Serhaud" (Khwaja Sahad), an Armenian merchant, was appointed second in the Embassy, and general adviser. The list of the Company's servants in Bengal for 18th January 1715 gives the names of all who actually went, as follows —

Factor John Surman, arrived 19 August 1707 Chief in
ye Negotiation

Factor Edward Stephenson, arrived 2 February 1709 10
Gone with ye present

Surgeon William Hamilton, arrived 27 December 1711
Gone with ye present

Writer Hugh Barker, arrived 17 August 1711 Gone
with ye present

Writer Thomas Phillips arrived 19 November 1711 Gone
with ye present

Out of six factors in the list, Surman stands first, Stephenson 5th, out of 23 writers, Barker stands 11th, Phillips 14th.

The Embassy started in April 1714, remained for a long time at Patna, left Patna on 19th April 1715, and on 4th September 1715, news was received at Calcutta that the Embassy had reached Delhi. On 9th January 1716 the news of Farakhsiyar's cure reached Calcutta. "Last night we received a packet from Messrs Surman and Stephenson at Dilly, dated December the 7th. In their letter they advise on the welcome news of the King's recovery, as a clear demonstration of which He, according to the Eastern manner, washed himself the

23rd Ultimo and received the Congratulations of the whole Court on the 30th December. He was pleased to reward Mr. Hamilton for his care and success in a public manner, presenting him with a Vest, a *Culgee*¹ set with precious Stones, two Diamond Rings, an elephant, horse, and five thousand Rupees, and has ordered several additions to be got for him.² Coja Seerhaud received at the same time an Elephant and Vest as a Reward for his attendance. They delivered to his Majesty the remaining part of their Present, reserving a small part only till the ceremony of his Majesty's Marriage should be over. The General Petition they had delivered to Cawn Dora in Order to have it presented his Majesty" (Consultations January 10th, 1716). It seems wonderfully quick work for a letter to have come from Delhi to Calcutta in 33 days, 7th December to 9th January, but the next was even shorter, thirty days. The Embassy remained at Delhi for a year and a half longer, possibly detained by Farakhsiyar's reluctance to part with Hamilton. On 17th July 1717, news was received by a letter, dated 17th June 1717, that the Embassy had had their farewell audience of the King on 30th May, and were preparing to start on their return journey (Consultations, 18th July 1717). They reached Tribeni, as stated above, about 20th November 1717.

Stewart (pp. 397-398) gives the requests made by the Embassy, and granted to Hamilton as follows. The petition "was at length presented in the month of January" (1716—this should be December 1715) "and besides various subjects of complaint from Bombay and Madras, stated the numerous impositions practised by the Nawab of Bengal and his inferior officers. It therefore prayed

"That a *dustuck*, or passport, signed by the President of Calcutta, should exempt the goods it specified from being stopped or examined by the officers of the Bengal Government under any pretence

"That the officers of the mint, at Moorshedabad, should at all times, when required, allow three days in the week for the coinage of the English Company's money

"That all persons, whether Europeans or natives, who might be indebted or accountable to the Company, should be delivered up to the Presidency at Calcutta, on the first demand

"That the English might purchase the lordships of 38 towns with the same immunities as the Prince Azeem Ooshan had permitted them to buy Calcutta, Chuttanutty, and Govindpore"

Hamilton died on 4th December 1717, and was buried in the old Churchyard at Calcutta, in the ground where St. John's Church now stands

When the ground was cleared to build that church in 1787, his tombstone, which had fallen down, and had been covered with earth and forgotten, in the 70 years which had elapsed since his death, came to light. Warren Hastings suggested that the lettering should be gilded, and the stone set up in the entrance hall of the church. This suggestion was not carried out. The stone was set up in Job Charnock's tomb, at the north-west corner of the grounds of St. John's, where it may still be seen. The epitaph is twice repeated, in English and in Persian. The English part runs as follows —

"Under this stone lies interred the body of WILLIAM HAMILTON, Surgeon, who departed this life the 4th December 1717, his memory ought to be dear to his nation for the credit he gained y^e English in curing FERRUKSEER the present KING of INDUSTAN, of a Malignant Distemper by which he made his own name famous at the Court of that Great Monarch and without doubt will perpetuate his memory as well in Great Britⁿ as all other nations in Europe"

The following is a literal translation of the Persian epitaph: "William Hamilton, Surgeon, servant of the English Company who had gone along with the English Ambassador to the Illustrious Presence and had raised his name high in the four quarters of the world by reason of the cure of the King of Kings the asylum of the world Muhammad Farakh Siyar the Victorious, with a thousand difficulties having obtained from the Court of the Asylum of the World leave of absence to his native land by the decree of God on the 4th December 1717, died in Calcutta, and in this place was buried"¹

(To be continued)

TYPHOID AS A COMMON CONTINUED FEVER OF NATIVES IN CALCUTTA

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ALTHOUGH cases, which we now recognise to have been typhoid, were described by the older writers such as Annesley and Twining, yet it was not until the year 1854 that the writings of Scriven¹ showed that true typhoid occurred in India among Europeans, while only two years later Ewart² independently described the disease in natives in the Ajmere Jail. In 1865 Ewart's collection of pathological specimens, which form part of the present museum of the Calcutta Medical College, contained six examples of enteric ulceration of the bowel. It was not, however, until 1870 that the labours of Bryden obtained for typhoid fever a place in the statistical returns of the British troops in India,

¹ *Culgee*, *Khalgi*, a turban ornament.

² Stewart states (pp. 397-398) that "among the presents given to Mr. Hamilton on this occasion, were models of all his surgical instruments made of pure gold"

¹ Great part of the above description of William Hamilton and the Embassy is taken from Wilson's 'Early Annals'

but the fact that in the six years from 1871-76 inclusive no less than 1,311 cases with 571 deaths were reported shows that the disease although formerly unrecognised was still doubtless present, and since that time enteric in the army has increased in proportion to the number of young and highly susceptible British soldiers in the country. Although typhoid was so early recognised by Ewart among natives, yet it has always been regarded as very much rarer among them than among Europeans in India, but there have always been some who maintained that it was common enough although opportunities for *post-mortem* confirmation were rare. Thus Norman Chevers in his invaluable commentary on the Diseases of India states that in ten years he only saw cases in Europeans and East Indians (Eurasians), and writing in 1886 he says—"I think that a minute inquiry into the prevalence of enteric fever among natives of India is still a desideratum." In the same place he wrote of the disease in natives "The general consent of the profession appears to be that such cases are very rare." Similarly in Madras two writers in 1878-79 state that enteric does occur, but rarely, in natives in that city. On the other hand, Dr Ewart maintained that he had often seen the disease in natives in Calcutta, although it was frequently complicated and masked by malaria, and Sir Joseph Fayrer in his Croonian lectures on the Climate and Fevers of India published in 1882 states that "It is said by some writers that enteric is a common disease among natives of India, by others that it is almost unknown. I think that it is common enough." He also gives details of an extensive outbreak among Gurkhas in Assam in which a Hindu and ten Khasias were also attacked, the diagnosis being confirmed by *post-mortem* examination. Further on he writes, "Marston seems to doubt the existence of enteric fever among the native population, but, as I have shown, it exists abundantly, and were *post-mortem* examinations more readily obtainable, it is probable, I think, that the characteristic lesions would be found, and not unfrequently."

These great differences of opinion are due to two causes, *firstly*, the very great difficulty in differentiating with certainty by clinical observations between typhoid fever and malarial remittents, pneumonias with great depression producing the so-called "typhoid state" and perhaps other forms of continued fevers in natives, and *secondly*, small number of such cases in which *post-mortems* are obtained even at the Medical College, while among the police and in native troops they are very rarely performed. These difficulties, added to the generally conceived notion that the disease is very rare in natives, causes a diagnosis of "remittent fever" to be made in the great majority of continued fevers which do not obviously fall under one of the fevers with well marked physical signs

such as pneumonia or cerebro-spinal fever, and unless some such special symptom as marked hæmorrhage from the bowel or perforation occurs the diagnosis is not likely to be changed. I shall return to this point later, but in support of the above statements I may refer to the writings of Goodeve,³ while the following remarks of the late Dr McConnell,⁴ who had several times verified the disease by *post-mortem*, are worthy of being quoted. In a letter to Dr Fayrer he writes "There is the great difficulty in diagnosis. In all the cases that I have seen here (the Calcutta Medical College) and verified by *post-mortem* examination, neither the course of the fever nor the range of temperature has been at all typical, and the presence of rose spots or of any specific eruption has been quite exceptional, although they have been carefully and repeatedly looked for. Malarial agency seems to modify the whole course of the disease, and thus one great help in diagnosis at home, *viz*, the diurnal range of temperature, is wanting to us out here. Especially difficult do I find it to distinguish between many remittents and enteric fever. For instance, one sees not infrequently a continued type of fever, with great vital depression, and perhaps mental perturbation, which is uninfluenced by antiperiodic remedies, such as quinine or cinchona, or but to a slight extent at any rate cannot in any sense of the word be cured or rather cut short, by their use. Yet there is no eruption, no diarrhoea, etc. Say the patient dies the chances are (for I have frequently seen this) that no specific bowel or other typhoid lesions are met with. If the case recovers the doubt still holds good, as one man will return it as typhoid, another as remittent, and yet of course neither diagnosis is absolutely reliable." At the time of writing the above in 1882 McConnell was "very sceptical as to the considerable prevalence of true enteric (with the typical *post-mortem* lesions) among the natives of this country" because he met with cases clinically indistinguishable with no enteric lesions *post-mortem*, so that it is not surprising that doubtful continued fevers should be still as a rule returned as "remittent fevers" and for enteric to be rarely diagnosed during life, and that this remains largely true up to the present day is evident from the fact that cases in which enteric lesions are found *post-mortem* in natives are still recorded as exceptional cases. Thus during the ten years following the appearance of Chevers' invaluable work in 1886 containing a summary of Indian experience up to that time, I find that in the columns of the *Indian Medical Gazette* seven cases in natives diagnosed clinically as enteric, and six more confirmed by *post-mortems* have been recorded. The most important contributions during this period have been two papers read and discussed at the defunct Calcutta Medical Society in 1893

and 1894 by Crombie⁶ and Pilgrim⁶ respectively. The first named in a paper entitled "Immunity of Natives of India from Enteric Fever" attempted to prove by the small number of cases returned as enteric in the hospitals of Calcutta in which natives were treated that the disease is very rare among them. For the reasons already given, and as I shall prove presently in further detail in the case of the Medical College Hospital, these returns do not give even a remotely approximate idea of the actual number of enteric cases treated in these institutions. In the latter paper two fatal cases of enteric in natives are recorded, and Crombie's position is traversed at all points. Since this discussion typhoid in natives has been more frequently recorded, notably in by A. Buchanan,⁷ who states that 25 cases have occurred in the Nagpur Jail between 1894 and 1899, in nine of which *post-mortems* were made, and by Lamb,⁸ who in April 1901 recorded several cases confirmed by Widal's test and at the same time refutes the statements of Freyer, based on imperfect methods, that the majority of natives are immune and give serum reactions on account of having suffered from enteric fever when children.

The Present Inquiry—The recent discovery and working out of the details of the serum test for typhoid fever has placed in our hands a method of investigation of the utmost value, which allows of the certain differentiation of enteric cases from other continued or remittent fevers which are liable to be confused with it clinically. Through the kindness of Dr Bomford and Dr Harris, the physicians of the Medical College Hospital, I have been enabled to study all the continued and remittent fevers admitted to their wards during the last four months, and to carry out serum tests and microscopical examinations of the blood in the pathological laboratory, the first fruit of which has been to shew that *enteric fever is much more frequently met with in this hospital at the present time among natives than has hitherto been imagined to be the case*. In the present paper I only propose to tabulate and briefly discuss the cases so far met with, and to consider in relation to the *post-mortem* records of the hospital whether the apparent increase in the number of enteric cases is due mainly to improved methods of diagnosis or to an increased prevalence of the disease. The more difficult and practically important question of the differentiation of enteric from other continued or remittent fevers by clinical or microscopical methods other than the serum test must be left to a future occasion and greater experience.

The accompanying table shows at a glance the main features of thirteen cases in natives of India met with in the last few months, and confirmed by Widal's test. It will be observed that the series include Native Christians, Hindus and Mahomedans. The Native Christians were all

children, which is of interest in connection with the commonly held belief that native children suffer much from the disease, a theory which is also supported by the series of nine cases, seven of whom were children reported by Cleghorn in 1885.⁹ The fact that these children were all Native Christians might at first sight be held to support the view that meat-eaters are much more liable to the disease than vegetarians, as illustrated by the well-known liability to the disease of Gurkha troops, but, on the other hand, it must be remembered that this class of children are readily brought to hospital by the Europeans under whose charge they are, while it is much more rarely that other native children are admitted to the Medical College for fever. Moreover, a large number of cases may show a different proportion. Of more importance is the fact that no class escapes altogether, Hindu and Mahomedan alike suffering, while during the same period cases giving typical Widal's reaction of a high degree of dilution have been met with in several patients of mixed European and native blood, who had been born and bred in India, in a Goanese, in an Armenian girl, both born and brought up in this country, and in a Chinaman, although it should be mentioned that this last case, which was admitted on the 20th day of his fever, was not thought to be a case of enteric by Dr Bomford, under whose care he was, although his serum clumped the typhoid bacillus in a dilution of 1 in 100. Thus no race or creed seem to be immune to enteric fever in India.

The Duration of the Fever—The figures given in the table include both the duration of fever of a continued or remittent, or exceptionally at the end intermittent, type recorded in hospital, together with the days of continued fever before admission of which a history was obtained. The latter periods are fairly accurate in the case of the Native Christian children, whose guardians furnished the information, but cannot be explicitly relied on in that of the adults, whose memory on such points is very uncertain, still it is worthy of note that in every case which recovered the fever lasted three weeks and upwards, as was also the case in two of the four fatal cases. This is also the case with the attacks occurring in other than pure natives, except in an Armenian girl with seventeen days' fever, and I regard it as being a point of the greatest importance because out of some forty cases of continued or remittent fevers which I have been able to watch in different hospitals of Calcutta during the last few months, over 80 per cent of those which lasted as long as three weeks continuously have proved to be enteric on using the serum test. On the other hand, I have not met with any cases of true enteric in natives of shorter duration than three weeks, such as might be termed mild or abortive cases, although very possibly they may occasionally occur, so that my experience so far does not point to this fever being exceptionally mild in natives, but rather the contrary, for the present series show a death-rate of 30 per cent which is only partly accounted for by the late admission of one of the cases. If these results are confirmed by a larger series it will be evident that continued fevers of three weeks' duration and over occurring in natives ought as a general rule, to be looked on as enteric unless there is any special ground for thinking otherwise, such as a negative Widal reaction in a late stage instead of regarding

TABLE OF 13 ENTERIC FEVER

	Hospital	Nationality	Sex	Age	Date of Admission	Duration of Fever	Result	General Condition	Lungs
1	Medical College	Native Christian	F	14	13-7-01	25 days	Recovered	Delirious	Bases congested
2	Ditto	Ditto	F	16	27-7-01	25 days	Ditto	Prostration	Bronchitis
3	Ditto	Mahomedan	M	23	1 9-01	38 days	Ditto	Dull and apathetic	Cough
4	Ditto	Native Christian	M	14	28-8-01	30 days	Died	Dull, and later delirious	Congested
5	Ditto	Ditto	F	8	4 9 01	25 days with relapse.	Recovered	Delirious and comatose, very depressed.	Bases congested & bronchial breathing
6	Ditto	Ditto	M	12	27 9-01	11 days	Died	Delirious, and later unconscious.	Clear in front
7	Ditto	Mahomedan	M	16	28-9-01	6 days	Ditto	Collapsed rather suddenly before death	Normal
8	Ditto	Hindu	M	35	29-8-01	? One month 2 days a half	Ditto	Delirious and very depressed	
9	Ditto	Ditto	M	27	4 10-01	23 days	Recovered	Much prostrated, and delirium.	Double pneumonia
10	Ditto	Ditto	M	20	17 11-01	25 days	Ditto	Prostrated and delirious	Right base congested
11	Ditto	Ditto	M	30	28 11 01	23 days	Ditto	Prostrated	Ditto
12	Alipore Jail	Mahomedan	M	23	2-9 01	26 days	Ditto	Much prostrated and delirium	Congestion of left base.
13	South Suburban Hospital.	Hindu	M.	20	15 9 01	21 days	Ditto	Much prostration	Ditto

natives as nearly immune to the disease, and consequently considering long continued fevers in them as likely to be anything but true typhoid fever as has hitherto been commonly the case.

Mortality—Including two cases occurring in natives elsewhere than in the Medical College Hospital, there have been four deaths in thirteen cases, or 30 per cent. Two died in an early stage of the disease, one with hyperpyrexia and local peritonitis with leucocytosis, and the other two at a late stage, one of whom had hemorrhage from the bowels and gums, these complications being characteristic of enteric fever. Convalescence has been slow in those which recovered, great prostration having resulted.

General condition during the fever and some points in the differential diagnosis—Prostration, mental dulness, and in the majority delirium, were well marked features in this series of cases. This so called "typhoid state," however, is so commonly met with in natives suffering from other forms of continued fever, and especially in pneumonia that my experience is in agreement with that of the late Professor McConnell and other older writers in regarding the general condition of the patient as of less diagnostic import in the case of natives of India than in European patients. Thus within the last few months three cases of pneumonia have presented such marked prostration, etc., as to give rise to a suspicion of enteric, which was only removed by a negative result of Widal's test, while, on the other hand, another case admitted for pneumonia of a well marked character was later suspected to be possibly enteric on account of the long duration of the fever, and this opinion was confirmed by a positive serum reaction in a high dilution. The presence of leucocytosis in pneumonia and its absence in enteric without complications may often be of diagnostic importance in such cases, but it is not to be altogether relied on, for this condition was present in the enteric case complicated with pneumonia, while I have several times found it absent in the form of broncho pneumonia which so frequently complicates the later stages of chronic malarial fevers, remittent or otherwise. Malarial remittents may also sometimes present the "typhoid state," but usually the prostration in them is not so great in proportion to the duration of the temperature as in enteric fever. Important help in differentiating these two forms of fever may sometimes be obtained from the presence of the malarial parasite, but, on the other hand, it may be impossible to find in many malarial remittent fevers already treated with quinine or cinchona when first examined, while it may also be sometimes present in typhoid cases as a complication, and consequently an examination for the malarial parasite will not always enable enteric and malarial remittents to be clearly differentiated. Other blood changes have frequently enabled me to correctly anticipate the verdict of the serum test, but they are somewhat complicated, so they must be left to for consideration at a future date. I have not yet met with a case of Malta fever in Calcutta, although the serum test with the micro organism of Bruce has repeatedly been carried out. Cerebro spinal fever may sometimes be difficult to certainly differentiate from enteric when first seen, especially if it is not known to be prevalent, but here the presence of leucocytosis is of great importance as in several cases of the former disease recently examined, I found a very great absolute and relative increase in the polymorphous white corpuscles a most marked feature, the total count being greater than is even met with in cases of complicated enteric in my experience, while in uncomplicated cases it is absent in enteric. The pulse was always soft, of low tension and usually dicrotic.

The Temperature Curve—The classical temperature chart is rarely seen in natives, partly because they do not come into hospital until after the temperature has reached its full development. There is also not uncommonly a tendency to the appearance of more marked

remissions than are usually seen in Europe, especially at about the end of the second week, while, although the final fall of temperature is by lysis, in the absence of late complication by pneumonia, yet the temperature is frequently intermittent for a few days after reaching the normal. In enteric fever the remissions do not tend to be most marked on alternate days as is frequently the case with malarial remittents. These features may possibly be the result of malarial influences, but how far they are due to a previously acquired malarial habit, if such an expression is permissible, and how far to actual coincident malarial infection, I am not at present prepared to say, although I have never seen a typical attack of malarial fever during convalescence from enteric. This variation from the classical temperature curve in the direction of the malarial remittent type in cases of undoubted enteric is of importance in so far as it considerably increases the difficulty of diagnosis, and it is for this very reason that the long duration of fever is of such great importance in the diagnosis of enteric. The most regular chart I have yet seen is that of a native prisoner in the Alipore Jail, whom I was enabled to see and obtain a positive Widal reaction through the kindness of Major W. J. Buchanan, M. S. In this instance the temperature remained steadily between 101° and 101° for twenty-three days, the patient being a Mahomedan male aged 23. The failure of full doses of quinine to reduce the temperature materially or make it intermittent is of great importance in diagnosing enteric from malarial remittent fevers, and this point was well illustrated in a case of Major Brown's in the South Suburban Hospital in a peon of the Salt Department, who had suffered from repeated attacks of fever in the Sunderbunds, and who came in with a remittent fever, anæmia and enlarged spleen, and appeared at first to be a most typical malarial remittent case. However, full doses of quinine not affecting the fever and the blood changes pointing to enteric rather than to malaria, I tried Widal's serum test and obtained a positive reaction. In this case the history of recent repeated attacks of malarial fever was very misleading, for it is the only enteric case of this series in which such a history was obtained, although it is commonly got in cases of malarial remittents, and together with some anæmia and marked enlargement of the spleen points strongly in favour of the latter disease.

Abdominal symptoms—These are of the greatest importance, for although they may be slight in some cases they are rarely altogether absent throughout the case. In the majority of the present series loose yellow stools, sometimes noted as being pea soup-like, were passed, although constipation was not unfrequently present during the earlier stages, and liquid stools were the only passed for a day or two late in the disease. Blood in the stools was noted in two cases, once in some quantity. Typhoid spots are so difficult to detect in dark skinned races, and still more difficult to differentiate from those due to other causes that they are of little value in diagnosis. They were typically present in the case of a Goanese patient in the Medical College Hospital, but have not certainly been detected in any pure native. Tenderness, especially in the right iliac fossa, together with gurgling, tumidity of the abdomen or tympanites were met with in nearly every case at some stage or other, and are of considerable diagnostic import and should be carefully looked for daily in fevers of long duration, as their presence strongly confirms a suspicion of typhoid, being in fact the most characteristic local distinguishing feature of the disease. The spleen was enlarged so as to be felt below the ribs in three cases, and increased dulness was noted in two more. In most of the others it was found not to be palpable on admission, but its condition during the later stages of the disease was not always noted. It is evident, then, that this organ is much less enlarged in enteric than in malarial remittents. The liver was slightly enlarged in one case.

Complications—Congestion of the bases of the lungs with rales and rhonchi were present in nearly all the cases, while in two of them signs of some consolidation were noted. In one case hæmorrhage from the gums and bowels was a marked feature, the result being fatal (No 4). In another signs of local peritonitis in the right iliac fossa, probably due to perforation, appeared the day before his death (No 6). In No 5 a well marked relapse occurred commencing on the twenty seventh day, the temperature having been irregularly intermittent for some days previously. In a Goanese patient but a relapse, and still later tibial periostitis occurred.

Widal's Serum Test—From the foregoing it will be seen that although the majority of these cases presented fairly well marked clinical features of enteric fever, yet several of them could not have been certainly diagnosed as such without the aid of the serum test, while it has been of at least equal value in negating such a diagnosis in another series of cases which presented general symptoms indistinguishable clinically from the typhoid state. The value of the series as a whole in proving that enteric fever is much more common among natives of Calcutta than has hitherto been generally supposed evidently rests on the reliance to be placed on the serum test, which again depends entirely on the necessary precautions for ensuring accurate results having been taken so that the exact methods adopted must be recorded here. The tendency among recent workers at this test has been to insist on higher dilutions and a more rigid time limit than was at first thought necessary. Thus Cabot says that a dilution of 1 in 10 should produce complete clumping in fifteen minutes, or one of 1 in 40 within one hour in order to allow of the result being regarded as a positive one, while Horton Smith regards a complete reaction in one hour in a dilution of 1 in 20 as reliable clinically being correct in 97 per cent of cases, but insists on a complete reaction in a dilution of 1 in 100 in one hour only, being regarded as absolute proof positive of the presence of enteric fever, although he adds that in 20 per cent of enteric cases a complete reaction in such a high dilution will not be obtained at any stage of the disease. By a complete reaction is meant that, in addition to the formation of well marked clumps, all the bacilli which remain free shall have entirely ceased moving. For this rigid test the microscopical method using a broth culture of under twenty-four hours growth is necessary, and has been adopted in all the reactions recorded in this paper, a very sensitive typhoid bacillus, kindly supplied me by Major Semple of the Kassauli Institute having been used. In all the cases dilutions of 1 in 20, 1 in 40 and 1 in 100 have been used, with the addition of 1 in 500 in some. Wright's sedimentation tubes were simultaneously used in the earlier tests, but although they are invaluable for general work and have great advantages in the simplicity of their use, yet in a well-equipped laboratory for

such a research as the present one the microscopical method allows of even a more delicate quantitative estimation with a given time limit than Wright's tubes. A control specimen was always used.

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undoubtedly be classed as enteric. One case in a European boy, aged 12, occurred in 1878. The ages of seventeen of these cases which were recorded showed two between 0 and 10 years of age, two between 11 and 20, nine between 21 and 30, and four between 31 and 40, the youngest being $2\frac{1}{2}$ years, and the oldest 40. The very small proportion of cases under 21 years of age as compared with those in table I is due to the rarity of autopsies in the younger patients, and supports the conclusion that the number of *post-mortems* performed on enteric cases in this institution bears only a very small proportion to the number of cases actually treated, it having been less than one-tenth during the last few months. There appears, then, to be no ground for believing that there has been any marked increase of the disease recently, but only improved methods of diagnosis have allowed of more cases being recognised. In fact if we consider the insanitary state of the native quarters, it is surprising that the disease is not even more common than the present inquiry shows it to be. Further, through the kindness of the Medical Officers in charge of the European General and the Station Hospitals, I have been able to see and carry out serum tests on cases of continued and remittent fevers in those large hospitals, with the result that the number of enteric cases in the General Hospital has been about the same as in the Medical College during the same period, while in the Station Hospital the disease has been conspicuous by its almost entire absence. The only possible conclusion is that so far as natives of India from being immune to enteric fever that it is probably almost if not quite as common among them in Calcutta at the present time as it is among Europeans, only as much of it occurs in children, who are rarely brought to hospital, while many other cases are treated in their home it is not so conspicuous. In this connection I may mention that several native practitioners with extensive experience have informed me that continued fevers of about three weeks' duration indistinguishable from enteric are frequently met with by them, but they find it impossible to differentiate them from other remittent or continued fevers with certainty by clinical methods alone. If my conclusion that the vast majority of fevers in which the temperature remains high for three weeks or more are enteric is confirmed by further experience, then the ultimate diagnosis, with its dietetic indications, will be usually much simplified. In the earliest stage, in the absence of the usual signs of pneumonia, cerebro-spinal or other well marked forms of continued fevers, it will be impossible to say whether the case will prove to be one of malarial remittent or enteric fever, while in the first week at least the serum test will also fail. During this early period, as was pointed out by Burton Brown¹¹ as long ago as 1879, the most important means of diagnosis is

Complications—Congestion of the bases of the lungs with rales and rhonchi were present in nearly all the cases, while in two of them signs of some consolidation were noted. In one case hæmorrhage from the gums and bowels was a marked feature, the result being fatal (No 4). In another signs of local peritonitis in the right iliac fossa, probably due to perforation, appeared the day before his death (No 6). In No 5 a well marked relapse occurred commencing on the twenty seventh day, the temperature having been irregularly intermittent for some days previously. In a Gornese patient but a relapse, and still later tibial periostitis occurred.

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treatment by full doses of quinine, the hypodermic method being used in the worst cases. If after several days not only is no improvement obtained, but the disease steadily progresses, enteric fever should be suspected and the serum test carried out, as by this time a positive reaction will be obtained in the vast majority of cases, and its confirmation by the subsequent progress of the cases will soon prove its great value.

Although there appears no reason for believing that there has been any marked increase of enteric fever in Calcutta during recent years, still the much greater frequency of this disease among natives than has hitherto been generally suspected, together with the very much higher mortality of this affection as compared with malarial fevers, makes it certain that enteric must be responsible for quite an appreciable proportion of the mortality now returned under the elastic heading "Fever," and lends further support to my recent statement that this heading in such a town as Calcutta affords but a very rough and unreliable indication of the true death-rate from malarial fevers. The importance of a knowledge of the true prevalence of enteric among natives in relationship to its incidence on the European population, both Military and Civil, is too evident to require dwelling on here.

Conclusions

1 So far are natives removed from being immune to enteric that the disease is really quite common among them, a continuous series of cases having been recognised by means of the serum test during the last five months in the Medical College, Calcutta.

2 Nearly every case in which the temperature remains high for three weeks or more continuously in natives is enteric, while mild or abortive cases of shorter duration are exceptional.

3 On account of the marked prostration or delirium so often seen in other forms of remittent and continued fevers in natives it is often impossible to certainly diagnose cases of enteric, except very late in the disease, by clinical means alone, but great assistance can be obtained by the skilled use of Widal's serum test.

4 Post-mortems are not very frequently obtained on enteric cases in natives owing to the ages of most of the patients being such as that they have relatives who claim the bodies, but the records of autopsies at the Medical College do not show any marked increase in the prevalence of the disease during recent years.

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- 4 *Fayrer's Climate and Fevers of India*, p 175
- 5 *Indian Medical Gazette*, 1893, p 176
- 6 *Ibid*, 1894 p 146
- 7 *Ibid* 1894 " 49
- 8 *Ibid* 190 p 123
- 9 *Ibid*, 1885, p 342
- 10 *Ibid*, 1897
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- 12 *Ibid*, 1901, p 370

While this paper has been passing through the press two specially interesting cases of enteric in natives have been met with. The first was a Hindu male, aged 23, admitted to the Medical College with a history of fever and diarrhoea for about a month, but a temperature of 97° F. The next day his temperature rose and continued high for twelve days at the end of which his blood gave Widal's reaction in a dilution of 1 in 20, and partially in 1 in 40, while eight days later it gave a complete reaction in a 1 in 100 dilution, the case evidently being one of enteric fever admitted at the beginning of a relapse. The second instance is still more interesting as no less than seven cases of continued fever clinically resembling enteric, and in two of which hæmorrhage from the bowels was observed, occurred in patients between the ages of five and eighteen in a very well to do and high class Hindu family. The blood of one of these cases, a boy aged five suffering from a relapse, was sent to me for examination, and very rapidly gave a complete reaction in a dilution of 1 in 100, proving conclusively that the case was enteric. One of the cases was believed to have contracted the disease by sleeping under the same curtain as another case. This group shows that the higher as well as the lower classes of natives undoubtedly suffer from enteric fever, while the incidence of the disease on the younger members of the family exclusively confirms the long suspected frequency of the disease among native children, and accounts for occasional doubtful reactions in adults in a dilution of 1 in 20, and enhances the importance of also using higher dilutions.

A PRELIMINARY REPORT OF OBSERVATIONS OF THE HABITS OF ANOPHELES

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OUR observations began from the month of July last and the present article is only a preliminary report of our observations.

Breeding places of anopheles during the rainy season

House-drains and those along the sides of streets or lanes rarely shew any larvae of anopheles though culex larvae abound in them. Water collected in places having weeds or grass growing over it seems to be a special attraction for the anopheles to breed in. Places containing water a few inches deep having mud at the bottom

and protected from the wind, the rain and the sun by grass or water-plants are often selected for breeding sites. Small watercourses in parts where the water is stagnant, shaded and covered by decayed grass and bits of straw or rotten banana leaves or trees floating on their surface seems to be another favourite site for breeding. In a watercourse we found while examining the water one morning that that part upon which the rays of the sun were directly falling and not shaded shewed far fewer larvæ than those portions a few feet apart which were more shaded. On another occasion the removal of the waterplants and the grass from the sides of a small *lutcha* surface-water drain containing a number of anopheles larvæ was followed by their complete disappearance for about a month and a half, and at the time of writing they have again been found at places where the grass has begun to grow. The great selection of the sites for breeding was shown by no larvæ being found in iron cisterns filled with water and kept near to the breeding places, nor in earthenware vessels kept in the rooms infested by the adults. Even in sites containing the larvæ we were struck by their unequal distribution. In a surface-water drain the largest number was found in the narrowest and the most shaded, and the most shallow parts as will be shewn from the accompanying diagram —



A & A'—Narrowest and most shady parts of the drain (large number of anopheles larvæ)

B—Wider part of the drain and not shaded (few larvæ)

C—Wet mud covered by grass (eggs of anopheles found)

In tanks, too, the selective powers of the anopheles of choosing its breeding sites is markedly shewn. We examined two tanks under almost similar conditions and a few yards apart from each other, and found that anopheles larvæ abounded in the one which was partially covered by *kulm sag* (Bengali), while in the other, which was clear of all waterplants, none was found. Tanks covered by such water-plants constitute a favourite site for breeding.

Running water does not seem to be a favourite breeding site, though many larvæ are found at the sides of watercourses where the water is flowing in a slow stream. In such a place the water at the sides, though not actually running, is being slowly renewed.

Merely shaded places containing water do not necessarily constitute a breeding place of the anopheles. Many house-drains perfectly shaded

from the sun never show any larvæ. Even in watercourses the parts shaded by big trees growing from the sides but not covered by water-plants shew far fewer than those where the water-plants were present. A *pucca* house-drain, however clean or dirty it may be, has not been found by us to be infested by anopheles larvæ though *culex* larvæ abound in such places.

Anopheles larvæ have been found in places containing fish, though in tanks containing a large number of fish they are absent, unless there is protection afforded to them by the presence of water-plants. *Culex* larvæ have been often found in the breeding places of anopheles, but generally the former are found in much smaller numbers in places which are the favourite sites for the latter. Besides in a very large number of places containing *culex* larvæ, no anopheles has been found. It is not merely a question of struggle for existence between the two and survival of the fittest, but an actual selection of the habitat that determines the presence of anopheles in a sample of water. Taking, for instance, an earthenware vessel containing water and kept in a room infested by both anopheles and *culex*, we have found that in a short time it becomes full of *culex* larvæ while no anopheles larvæ have as yet been found. We have seen the anopheles sitting on the walls of such vessels probably for the purpose of drinking water, but we have seen them deposit their eggs. Similarly, again, house-drains or drains along the streets or containing excess of sewage contamination have been found full of *culex*, but not of anopheles larvæ. Generally in a place where anopheles larvæ are found in large numbers *culex* are few, though on one occasion did we find both anopheles and *culex* larvæ in large numbers in the same place.

Anopheles does not necessarily breed in places where the larvæ can be made artificially to live and grow. We took, for instance, the water of a drain containing only *culex* larvæ with the mud at its bottom, and after all the *culex* had developed into adults we introduced an impregnated anopheles female into a bottle containing the water. Eggs were deposited and the larvæ that were developed out of them lived for more than a fortnight, though none grew up to the adult stage.

To test whether the anopheles made any selection of water for depositing its eggs, we made the following experiments —

I Impregnated anopheles females were introduced into a wide mouth bottle containing 3 gallipots, having wet mud, water, and water covered by green grass respectively. Eggs were deposited in the wet mud and the water covered by green grass but not in the pure water.

II Impregnated anopheles females were introduced into a wide mouth bottle containing 2 gallipots having water and water covered by green grass respectively. Eggs were only deposited in the water covered by green grass.

III—Impregnated anopheles females were introduced into a wide mouth bottle having water and wet mud respectively. Eggs were deposited only on the wet mud.

(These experiments have not been exhaustively made, but so far they distinctly go to prove that the anopheles has a great preference for depositing its eggs in water containing mud or green grass.)

Anopheles eggs—The eggs are deposited at angles with each other forming several equilateral triangles joined to each other. Sometimes they do not form any triangles, and sometimes they lie parallel to each other. On a dewy surface, as inside a bottle inverted over another containing water, they are deposited separately from each other.

Deposit of eggs on
surface of water

Deposit of eggs on
a hard dewy surface

The method of deposit is quite different from the way in which the culex deposits its eggs, which consists of parallel rows joined to each other and giving rise to a somewhat compact mass slightly concave in the middle thus—

Typical egg boats are, therefore, formed by the culex and not the anopheles eggs. The eggs are generally deposited at one sitting, though on one occasion we found the deposit of eggs was completed at two sittings with an interval of two hours between the two sittings.

Anopheles may be artificially made to deposit its eggs on any kind of water. Tap water, water from various drains, distilled water were all tried, and in all of them the eggs were deposited and hatched. Inside bottles we have seen them sometimes depositing their eggs within two hours and at other times after eight to twelve hours. They are deposited at night, sometimes towards evening, and sometimes towards morning. On some occasions the anopheles refused to deposit their eggs without any obvious reason, and we often found that those that did not deposit their eggs on one night refused to do so on subsequent nights. Eggs were never deposited in the day. We have not as yet found them depositing their eggs in the day even when kept in the dark. In perfectly dry tubes we never saw them deposit their eggs as observed by Major Ross, but on a hard dewy surface they may be laid as we found inside a bottle inverted over another containing water.

The eggs cannot bear dessication for any length of time. Though kept alive in contact with moisture, yet when the water of a bottle containing them is shaken so that they stick to the sides and dry up, they die within a short time. It may be that many eggs are thus destroyed in nature by winds. The eggs are hatched by the separation of a cap. As soon as the cap separates the larva shoots out of the shell unlike the culex which may come out of the shell slowly and may remain coiled inside it for some time after the separation of the lid. The cap of the egg shells may be facilitated to separate

by teasing them gently with a needle, or simply by putting them on a slide with a little water on it, at the approximate time of hatching. The eggs may even be hatched in pure kerosene oil, if they are put in it at this time. We have made them hatch in a solution of Canada Balsam, and have succeeded in this way in making specimens of larvæ partly inside and partly outside the egg shells.

Anopheles larvæ—They are generally hatched at temperatures of 84° F to 86° F within 24 to 30 hours. The process of hatching of the eggs is completed in five or six hours after it has started.

The larvæ of anopheles are fond of sticking to decayed grass or leaves or bits of straw floating on the surface of water. They have a great attraction for rotten plantain trees. The larvæ of the same species may differ in colour according to the kind of food they live upon. In bottles containing mud at the bottom they can be seen sinking down to feed themselves. While feeding they lie horizontal or perpendicular to the surface of the mud, to which some of them may remain sticking even when the water is moderately disturbed. Sometimes they penetrate a slight distance into the mud to seek nutrition.

We have never seen the habit of cannibalism among the larvæ, though occasionally the dead larvæ were seen being seized by the living ones. When dead they are seen floating on the surface like a scum, or they may sink to the bottom.

The larvæ live in different kinds of water for different lengths of time.

(1) Larvæ developed in simple tap water, kept unchanged, lived for three days in it.

(2) Larvæ, about a week old, were put into a bottle of tap water containing a slight quantity of mud—some lived for ten days.

(3) Larvæ developed in tap water containing plantain juice—some lived for about 10 days.

(4) Larvæ developed inside a bottle containing water from a drain with the mud in it—many grew fast for some time and some lived from fifteen days to three weeks.

(5) Larvæ developed in tap water containing mud from the streets—a few (very much dwarfed) lived for three weeks.

It is extremely difficult to make the anopheles pass through their whole larvæ stage in water contained in *gumlas* or bottles, if the water is kept unchanged. Various kinds of water such as containing plantain juice, water of places where the larvæ are found with or without the water-plants found in them, and with or without the mud from the bottom, have all been tried without being renewed. In none of them did the anopheles pass through their whole larval stage. This markedly contrasts with the habits of the culex, the duration of the larval stage of which can be easily studied. On one occasion some of the larvæ caught and kept in the water where they were found, did not complete their larval stage.

even after three weeks, after which they died, due, probably, to inanition from want of food supply.

Anopheles laivæ have been kept alive in bottles containing mud and water not more than one-sixteenth inch deep showing that they can live in very shallow water.

In all the places where we found the *anopheles* we also found *Culex laivæ*, though generally where *anopheles* are found in abundance *Culex* are not plentiful. Rarely *anopheles* have been found in places where *Culex* formed the great majority of the *laivæ*.

Anopheles laivæ do not bear dessication for any length of time. Larvæ six days old were put on a dry slide at a temperature of 92° F in a breezy place and died in between 15 to 18 minutes.

Effect of heat upon *anopheles laivæ* —

(1) Larvæ—a day old—were not dead up to 3 hours when the temperature was raised up to 100° F.

(2) Larvæ—two days old—were kept in water at a temperature of 110° F, most of them died, but a few were alive even up to 20 minutes.

(3) Larvæ—a day old—were kept in water at a temperature of 115° F, all died in 6 minutes.

(4) Larvæ—a day old—were kept in water at a temperature of 115° F—117° F, all died in 2 to 3 minutes.

(5) Larvæ—2 days old—were kept in water at a temperature of 117° F, all died in $\frac{1}{2}$ to 1 minute.

Effect of kerosene oil and solution of salt upon *anopheles laivæ* —

(1) Larvæ—a day old—live from $\frac{1}{2}$ to 2 minutes in pure kerosene oil.

(2) Larvæ—a day old—were kept in water poured over kerosene oil (kerosene oil—2" and water—2½" deep), death took place in 15 to 20 minutes.

(3) Larvæ—12 hours old—were kept in water 3" deep, over which kerosene oil was gently poured (1½" deep), many died, but some lived even up to 3½ hours.

(4) Larvæ—three or four days old—were kept in a saturated solution of salt, all died in 15 to 20 minutes.

Anopheles pupæ—The pupa stage lasts from 24 to 48 hours.

Anopheles adults—All the varieties that have been examined by us do sing. It seems that the song of the males is more high-pitched than that of the females. The males have been kept alive inside bottles containing water with plantain juice for a week, while the females under such circumstances died in one to two days, on the other hand, in perfectly dry tubes the females live longer than the males, which sometimes die some hours after they are caught. The females soon after birth do not have much attraction for human blood. This was well exemplified in one case in which a large number of new-born *anopheles* were introduced inside a mosquito curtain with a patient suffering from intermittent fever sleeping under it. It was found next morning that all of them were sticking to that part of the curtain which was accidentally wetted by the rains. The same, we may remark here, holds good in the case of some species of *Culex* too. *Anopheles* do not seem to fly to long distances from the places of their birth. They are caught in largest number sitting on the folds of black blankets, a much

smaller number is found sitting on the white walls. Generally in test tubes the males can be seen sleeping at night, while the females fly about.

ANOPHELES MOSQUITOS IN TEZPUR, ASSAM

By CHAS A BENTLEY, M B, O M (EDIN)

Anopheles (Bentleyi).

GENERAL coloration black, with a crest of white scales on the vertex, which extend for a short distance forward beyond the base of the palpi. The distinguishing feature is the extreme length of, and the densely black scales on, the palpi and proboscis, which give the insect a top-heavy appearance.

The wings which are very darkly colored along the costal margin, have an appearance to the naked eye, which gives the idea of their having been smudged with black pigment. On examination under the microscope it may be seen that besides the arrangement of black scales on the "longitudinals" which lends itself to this impression, there is also a general darkening of the hyaline portion of the wing near the costal margin.

The great length of the palpi and proboscis may be judged by the fact that they, together with the head, measure almost the same length as the abdomen (without the thorax).

Wings

Each wing has two cream-colored areas on the costal margin, which is otherwise intensely black. The first of these areas, which is the most distinct, occurs about two-thirds down the costa. The second one is almost super-apical and is not nearly so distinct as the other.

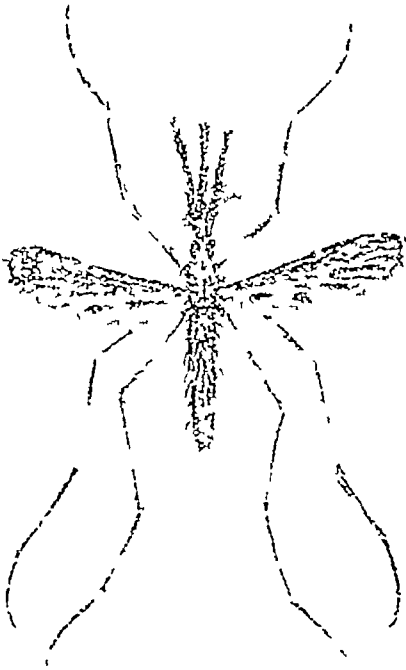
Besides these two spots, there is a distinct portion of the marginal scale fringe, which is white instead of black. This occurs just at the apex, and extends between the extremities of the 1st and 4th longitudinals.

The first, second and third longitudinals are chiefly black scaled, but here and there a few white scales may be seen, which help to produce the smudgy appearance alluded to above.

The fourth longitudinal is black scaled with a little white, except at its bifurcation, where a fairly dense collection of black scales give the impression of a spot.

The fifth longitudinal is chiefly white scaled, with a few black scales intermixed, which increase distally, finally becoming almost marked enough to call spots, at the extremities of the two branches. The fourth longitudinal is white scaled, except for two distinct black scaled spots of considerable size, one situated at its distal extremity, and the other, the most marked, about its mid length.

As I have before stated, the margin of the wing is fringed with black scales, except at the apex, where the black scales are replaced by white one



Proboscis—The proboscis is intensely black, being covered with thick black scales. A few white scales may be seen at the extreme tip

The Palpi—These, like the proboscis, are white tipped and covered with intensely black scales. These scales are so long and lie so thickly and so give a top-heavy appearance to the insect, which appears to the naked eye almost as though it possessed a large crest of black feathers

The antennæ have segments adorned with sepia-coloured hairs

The head is covered partly with silvery white and partly with blackish hairs. The white ones form a sort of small crest which starts from between the eyes and extends forwards some little distance over the junction of the palpi with the head.

The eyes are black.

The nape is covered with brownish black scales

The thorax is of a general sepia tint, covered with long straggling hairs of a golden brown colour

A sort of tuft of hairs of a slightly lighter hue, runs forwards from the front of the thorax dorsally

The abdomen is a brownish black colour, with indistinct segmentation. It is covered with golden brown straggling hairs, which do not hide its prevailing black coloration

The legs are a light brown above, covered with dark brown scales. On the under surface, however, they are buff coloured

They show slight thickenings at the joints, which are hair tufted

There are distinct yellowish white rings, apparently situated at the joints, to most of the smaller articulations of the tarsi

The marking on the costa, the spots on the wings, the coloration of the legs and the peculiar collection of scales upon the palpi and proboscis serve to distinguish this mosquito from any of the species described in Giles' "Guats or Mosquitos"

I found this mosquito first in June, in my own bedroom. Since then I have repeatedly caught specimens of this variety, and I have also bred them up from larvæ obtained from a pool of water near a small village infected with "Kala-azar"

Besides the species of anopheles described above, I have found *Anopheles Rossii* and *Anopheles Costalis* in great abundance

I have also found one or two specimens of a species which answers to the description given in Giles' book, of *Anopheles Superpictus*

A History of Hospital Practice.

GASTROTOMY FOR REMOVAL OF FOREIGN BODIES (55 RUPEES) FROM THE STOMACH—RECOVERY

By G W P DENNIS, M R O S (ENG.), L R C P (LOND.),
LIEUT. COLONEL, I M S

THE following case deserves to be recorded, not only on account of its surgical interest, but because of the extraordinary circumstances which led to the necessity for so serious an operation

A powerfully built, healthy-looking little man, about 30 years of age, came to the Egerton Hospital, Peshawar on the 20th October 1901, and gave the following extraordinary story. He said he was an Afghan, that he resided in a village in Afghan territory several marches across the border, and that he was an ardent disciple of a "Mulla" (holy man) who lived in the Peshawar district. He had been in the habit of making periodical visits to this mulla with the object of receiving religious instruction in the Mahommedan faith

Eight days before he consulted me, he said he was coming into British territory on a visit to his mulla. On arriving at a place called Dakhi (one march beyond Landi Kotal) all travellers are searched by the Amir of Kabul's order, and all property in their possession, including money, is taxed. He said a tax of three per cent is levied on all cash in possession of travellers, and that in order to evade this tax

he considered the idea of swallowing all the money he had with him

While some of his companions were being searched he set to work to swallow, as fast as he could, a sum of sixty-five Kabuli rupees he had with him. He had nearly completed his wonderful feat when the Amir's officials detected his game and rushed at him. He took to his heels and ran down the road, swallowing, as fast as he could, as he ran the remainder of the cash, but before he could finish his meal, he was caught and six remaining rupees (some of which were in his mouth still) were seized by the officials and forfeited. As the patient had sixty-five rupees to start with, and as six only remained when he was caught, he was satisfied that he had swallowed 59 of the coins.

He was, however, allowed to proceed on his journey. On his arrival next day at Landi Kotal he went at once to the small Government Dispensary there, told his story, and asked for a strong purgative, which was given to him. This, though it purged him violently, failed to bring away any of his lost treasure.

A day or two afterwards another purgative was given, but this was as unsuccessful as the first.

He then came on to Peshawar (three marches) and related to me his grievance. The cash had then been inside him for eight days. The only symptoms he complained of were a feeling of weight in the stomach and some loss of appetite.

His grief over the loss of his money was, however, very acute, and his only thought appeared to be the recovery of his hidden treasure. He wanted me to cut him open at once and restore him his money.

A most careful examination by palpation of the abdomen when the patient lay on the table failed to reveal the smallest sign of the silver mine within him. The intestines were quite empty, and the abdominal walls, being free from fat, facilitated the examination. But on making the man stand up and stoop forward, and on applying intermittent pressure above the pubes, a moveable heavy mass could be felt most distinctly to come in contact with the tips of my fingers. It was, however, quite impossible to make out the size of this mass, or grasp it in any way between the fingers.

It seemed to me just possible that the coins might have passed through the pylorus and have become lodged in a coil of some part of the small intestine, but against this was the fact that the man's bowels had at no time become obstructed, and nothing could be felt in the abdomen when the man was lying down.

I decided to feed him up for 24 hours with large quantities of solid food and to follow with a strong purgative. If this failed to remove the coins, I proposed making an exploratory incision mid way between the umbilicus and pubes.

The purgative acted very freely, but not a single coin appeared in the dejecta.

On the morning of the 10th day, after the man had made his extraordinary and indigestible meal, I decided to operate. By this time his distress had become very acute. He complained of continuous burning pain in his abdomen, much aggravated by movement, and the only position he could maintain for any length of time was sitting in a squatting attitude with his body well

thrown forward. His pulse was rapid, but there was no rise of temperature.

On the 23rd October he was placed under chloroform, the skin of the abdomen having been previously carefully washed and disinfected in the usual way. I made an incision three inches long in the middle line, commencing one inch below the umbilicus and opened the peritoneum in the usual way. On passing two fingers into the abdominal cavity no sign of the heavy mass (so distinctly felt when the man was standing up) could be discovered. Some coils of small intestine presented in the wound. With much patience I slowly and gently passed the whole length of the small intestine, from the pylorus to the caecum, through my fingers, but found nothing. I then inserted my whole hand into the peritoneal cavity and explored the entire length of the large gut from the caecum to the sigmoid flexure of the rectum, but it was also empty.

I then passed my hand up between the coils of intestine and the anterior abdominal wall to the stomach and, to my chagrin he stated, could distinctly feel the whole mass of rupees lying in that organ, dragging by their weight the posterior wall far back into the abdominal cavity.

It seemed obvious that the stomach could not be opened and its mine of wealth removed through my exploratory incision below the umbilicus, and it was a question whether the patient could stand the shock, prolonged anaesthesia and further manipulation necessary for a gastrotomy operation. He had already been more than an hour under chloroform. The immediate suturing of the lower abdominal wound was imperative. This I did as rapidly as possible, the peritoneal edges were brought carefully together by eight or ten interrupted carbolic catgut sutures. Four deep stout silk sutures were then passed through the skin and abdominal muscles, and finally some superficial fine silk sutures brought the edges of the skin neatly together.

The patient was taking chloroform well, his pulse was very fair, and there was remarkably little shock. All through the operation his chest and abdomen and pelvis had been kept swathed in towels wrung out in hot carbolic lotion.

I decided now to perform a gastrotomy and remove the coins. The incision recommended by Mr. Howse (*Dict. Pract. Surgery*, p. 590) was made, i.e., an oblique one three inches long, parallel with and one inch below the lower margin of the left costal cartilages, and commencing about 1½ inches from the middle line. The muscles and abdominal fascia were incised in the same direction as the superficial parts. Immediately the peritoneum was opened the lower border of the stomach, with the omentum attached, bulged into the wound. One anterior surface of the stomach was then drawn gently out, sufficient to permit of an incision 2½ inches long being made in it. Sponges attached to strings were packed in the sides of the wound to prevent protrusion of coils of intestine, which at this period of the operation were very difficult to restrain, owing to the patient making violent efforts to vomit.

My Assistant-Surgeon, Allah Jawaya, held the anterior wall of the stomach firmly in his fingers, and I made an incision through the peritoneal and muscular coats in the long axis of the stomach. This caused very profuse bleeding from a number of small arteries and veins which were seized and tied with fine catgut before the mucous coat of the stomach was opened. When the bleeding had ceased, I drove my knife through the mucous lining of the organ. Several small vessels in this coat began to bleed profusely which I seized with Spencer Well's forceps.

I then inserted my index and middle fingers into the stomach as far as they would go, but failed to find the coins, which were lying out of reach at the back of the abdominal cavity. Owing to the extreme elasticity of the stomach wall I found no difficulty

in inserting the whole of my left hand through the incision into the interior of the stomach. This procedure I preferred to groping about at the back of the viscus with a pair of forceps which might have pinched or otherwise injured the mucous membrane. Once my hand was inside, there was no difficulty in gathering up the large number of coins that lay therein. I had, however, to insert my hand a second time before the whole of the coins could be removed.

The patient began to strain and vomit again after the coins had all been extracted, and it was impossible to attempt suturing the stomach wall till this had ceased.

The mucous coat showed a strong tendency to curl inwards along the incised edges, and it was with much difficulty that I was eventually able to bring the edges neatly into apposition with catgut sutures.

When this had been done catgut Lembert's sutures were applied to the peritoneal lining, and after satisfying myself that the incision was firmly closed, and that all bleeding had ceased, I returned the protruding portion of the stomach into the abdomen.

The abdominal incision was then sutured in exactly the same way as the incision below the umbilicus. The external wounds were dusted with iodoform, covered with dry antiseptic gauze, over which a thick pad of salalambroth wool was placed and the patient was removed to his bed and packed round with hot water bottles.

He rapidly rallied from the slight shock caused by the operation, and it was extremely difficult to restrain his exuberant joy at the news that his lost treasure had been safely recovered.

On the second day after the operation his temperature rose to 99.4° , and on the evening of the third day it was 100° , after which it never again went above normal.

The lower abdominal incision healed beautifully by first intention without a drop of pus, but the upper wound was not so fortunate, and owing to a small collection of pus having formed under the skin, a drainage tube had to be inserted for a few days.

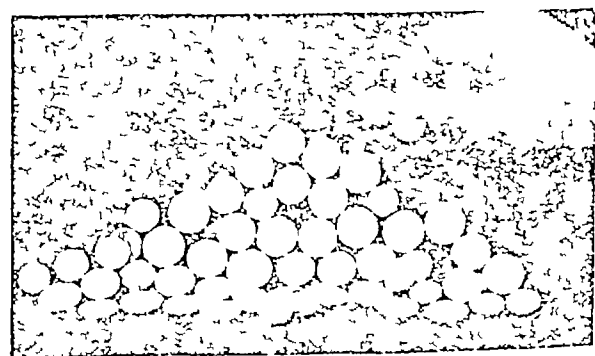
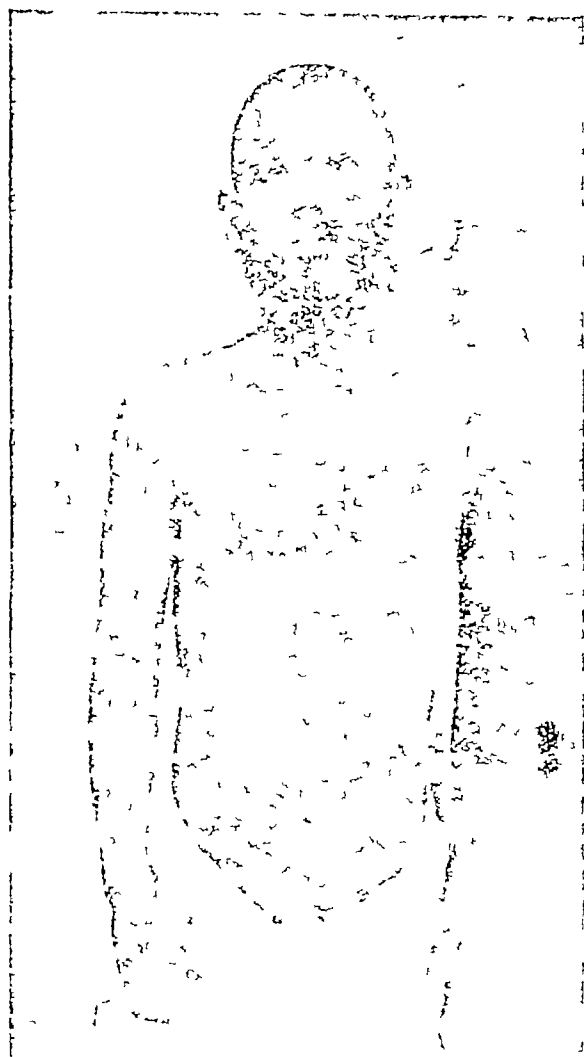
The patient was fed by nutrient enemata three times a day for the first six days, consisting of yolks of eggs, milk and brandy. He complained a good deal of thirst during the first two or three days, for which small lumps of ice were allowed by the mouth from time to time.

On the sixth day he was allowed a small quantity of milk every two or three hours. On the eighth day he was given soup as well as milk, and on the tenth day he was promoted to milk, and rice, butter and soup.

The patient was a wild trans-border Pathan and could not be made to understand the danger of the operation he had undergone. It was only by placing a man on duty over him night and day and keeping a watchful eye on him constantly that he could be prevented from tearing off his dressings and getting up. He admitted to me on the sixth day that he had stolen and drunk a pint of milk two hours after the operation, which the dresser on duty had left on a small table, and which was intended for administration by the rectum. But apparently no evil resulted from this rash act on his part.

For the first three days it was found necessary to keep him more or less deeply under the influence of morphia by hypodermic injection owing to the impossibility of keeping him quiet otherwise.

The actual number of coins found in his stomach was fifty-five Kabuli rupees (a photograph of which I am attaching to this report). The patient was very indignant when told that only Rs 55 had been found inside him, for he contended that he had swallowed Rs 59, but he afterwards admitted he might have dropped



some when he was being chased by the Amiri's officials. The exact weight of these 55 Kabuli rupees I found to be $17\frac{3}{4}$ ounces.

The most interesting points in connection with this case may be summed up as follows—

(1) The weight of the coins in the stomach when the patient was standing up dragged the lower portion of the stomach down almost into the pelvis, and the moveable mass I could feel just above the pubes led me to believe they had become lodged in some mysterious way in a coil of the small intestine without causing obstruction of the bowel.

(2) The remarkable absence of any serious symptoms till the tenth day after the coins had been swallowed.

(3) The extraordinary vitality of these wild Frontier people and their powers of resisting shock. The patient was $2\frac{1}{2}$ hours under chloroform, $4\frac{1}{2}$ ounces of the drug had been used through a Junker's inhaler, the whole of the large and small intestine had been freely handled, many feet of gut had prolapsed through the wound when he was vomiting which were returned with no small difficulty, the stomach had been opened and my hand introduced into that organ, and yet, at the end of the operation, the patient had a very fair pulse and no shock worth mentioning.

(4) The story the patient gave of his having swallowed a pint of milk two hours after the operation when the dresser was out of the room. The stomach never after the operation showed the slightest tendency to be irritable.

(5) The rapid and almost uneventful recovery of the patient, who, but for the suppuration that took place in the upper wound, was practically quite well ten days after the operation. The suppuration of the upper wound I attribute to the patient having inserted his fingers under the bandage and dressings to ascertain what sort of an incision I had made. He admitted having done this.

The man's great terror all the time he was under my treatment, and nothing I could say would allay his fears, was that after all I had done for him I was sure to insist on his becoming a Christian.

The photograph of the patient which was taken on the fourteenth day after the operation gives a very fair idea of the two abdominal incisions that I made.

The man was in excellent health, able to eat anything, and left the hospital for his home on the twentieth day after the operation.

CASES OF GYNÆCOMASTIA.

By ROBERT BIRD, M.D., F.R.C.S.,

CAPTAIN, I.M.S.,
Medical College, Calcutta.

The following cases are worthy of record—

Case I—Aotar, a Hindu male, *æ*t 21, came in July 1901 to show his breasts. He had only lately arrived in

search of work from his home in Mirzapur. He complained that his breasts were like those of a woman and that he was ashamed to uncover his chest. They had been steadily increasing in size for some years past.

He was a healthy countryman, of normal build, spare and fairly muscular. There was little or no hair on the face. The pelvis was of the masculine type. The genitals were normal but small. He had had no children. He was fairly intelligent with a skull of ordinary size. He could not account for the increase in size of the breasts. The breasts had never secreted milk. He did not know that any member of his family was similarly afflicted. As shown in photographs "1" and "2" the breasts and mammae were well developed with prominent nipples. No milk exuded on pressure. The breasts were painless on manipulation. The skin over them was normal. The breast substance was firm, and the edge of the gland could be easily rolled under the finger. The nodular character of the gland lobules could be detected. The patient was very anxious to have the breasts removed. He was put under chloroform, and by means of a curved incision eight inches long, along the lower and outer aspect of the gland, the skin was reflected. The ducts at the nipple were cut across so as to preserve the areola. The gland was then easily dissected out of its bed of cellular tissue. The wound was then sutured with horse hair sutures. The stitches were removed on the sixth day.

The gland was nearly 6 inches in diameter and 1 inch thick. On section the fibrous trabeculae were well marked, the small lobules of the gland lying between them. Microscopically, the acini were small and the lining epithelium scanty and of the low columnar type, something akin to that of the female gland in its resting state.

Case II—L. S., a Hindu male, *æ*t 20, came to hospital with a very similar condition of the breasts. He was very much ashamed of his condition, which he said made him like a woman. He was a muscular man without hair on his face (photograph No 3). The genitals were small but normal. The thighs and pelvis were of the masculine type. The skin over the breasts contained more fat than that of the preceding case. The substance of the gland seemed rather diffuse and its edge not well defined.

The glands were removed in the same way as those of the preceding case. The dimensions were about 6 inches in diameter and about $\frac{3}{4}$ inch thick. The trabeculae were not well defined, and the gland tissue on section showed as small white points scattered through the substance of the growth. The growth was not examined microscopically.

Case III—X. Y., a Hindu male, *æ*t 18, presented himself at hospital with the condition of gynæcomastia well marked. He wished to have them removed as they were the cause of great *shallam* to him. The left breast was removed, and he disappeared for a time. He has just returned and asks to have the right breast removed.

He is slightly built, with a smooth face and scanty pubic hair. The genitals are small, the left testicle being the size of a small nut, but otherwise normal. The pelvis is of the ordinary masculine type form. The breast is not painful on manipulation, and no milk exudes on pressure. The mamilla is well developed, and the nipple erects itself easily. (Photograph No 4).

Case IV—The writer saw some years ago at hospital a Mussulman boy *æ*t 13, who had marked hypertrophy of both breasts. The glands were 2 inches in diameter on surface measurement. Milk did not exude on pressure. The genitals were small, and there was no sign of pubic hair. The patient's father had brought the boy for diagnosis and was advised that nothing need be done at present. The boy has not been seen since.

The condition called gynæcomazia or gynæcomastia was known to the ancient writers

who repeatedly described cases of it. But it is possible that some of the early recorded cases were those of accumulation of pectoral fat and not of true glandular hypertrophy.

The condition is a rare one, as Puech states that it occurred only once in thirteen thousand conscripts examined. Le Dentu and Delbet (*Traité de Chirurgie*, Tome 7) state that the condition is fairly common if it be a question of the external form of the breast, but exceptional from the pathological point of view. Gruber (*Mem del' Acad imp des Sc de St Petersburg*, 1, tX No 10, 1866) succeeded in collecting only 54 cases of true mammary hypertrophy. These he divided into two classes:

1. Primitive gynæcomastia, the subjects of which were of ordinary development.

2. Secondary gynæcomastia, the subjects of which had some abnormality of the genitals.

This division is incomplete in that many of the subjects are not deformed, but only show certain feminine characters well marked, as absence of hair on the face, large pelvis, &c. There is another division of cases which develop after atrophy of the testicle from disease or after castration (Schuchardt, Martin, Gorham). It appears that if the testicles are removed at an early age, or after thirty, hypertrophy does not ensue. The condition may be uni- or bilateral. Gruber in 45 cases found that the condition was bilateral in 35, dextro-lateral in 5, sinistro-lateral in 5 cases. In the *International Text-book of Surgery*, vol 2, it is stated that only one breast, usually the left, is affected. It is said to be unilateral in cases supervening on removal of the testicle on the same side, but the evidence on this point is not satisfactory. The great majority of cases of castration are not followed by any untoward result.

The possible existence of lactation in this condition is very interesting. Gruber doubts the possibility, but Schmetzer relates the case of a man who gave from 8 to 64 grammes of milk in the twenty-four hours, and from whom 360 grammes were collected in two weeks. In the four cases described above there was no sign of lactation. The ætiology of the condition is obscure. Williams was of the opinion that every human being was in a state of latent hermaphroditism and hence every woman had masculine, and every man feminine, characters latent, which could be called into activity by suitable conditions.

Hereditary causes seem to have a certain influence (in three brothers — Schumann, in father and son — Hiller).

Age, too, seems to play an important part in the development of the affection. In the four cases detailed the onset of the symptoms dates from the commencement of puberty. It appears to be rarely noticed after adult life, as, in 48 cases, Gruber found but 8 cases occurring after forty years of age.

It has been said that the subjects of the condition are often badly developed, physically and intellectually. This was partly true in one of the four cases above, and he was a wretched starved orphan, who had no home.

A remarkable case will be found in the *Archives of Surgery* (vol 1, p 335 J Hutchinson). A young man had continued fever, had erythema nodosum, followed subsequently by proptosis of one eye. After an interval he had suppuration of a knee joint. Then he developed mania, for which he was placed in Bethlem Hospital. He regained his health and his mind improved. At the time of record, 1891, he had developed gynæcomasia of both breasts. The pathology of the disease is that of a true glandular hypertrophy. In well marked cases, as that of one described above, there was clear development of trabeculæ supporting small acini arranged in little lobules. In the second case the arrangement was more diffuse, although the gland was enclosed in a well developed capsule quite distinct from the surrounding fatty cellular tissue. In Virchow's *Archives*, 1894, 1895, the histological examination states that the gland had a large development of connective tissue as trabeculæ in which were small diverticula containing columnar epithelium which did not quite resemble that of the quiescent female breast. Gynæcomastia is not to be confounded with mastitis neo-natorum or mastitis adolescentium.

PRACTICAL NOTES

SOME APPLICATIONS OF HOT WATER.—The *Medical Age* gives the following as some of the therapeutic uses of hot water —

Headache almost always yields to the simultaneous application of hot water to the feet and back of the neck.

A towel folded, dipped in hot water, wrung out rapidly and applied to the stomach acts like magic in cases of colic.

There is nothing that so promptly cuts short congestion of the lungs, sore throat, or rheumatism as hot water when applied promptly and thoroughly.

A towel folded several times and dipped in hot water, quickly wrung out and applied over the painful part in toothache and neuralgia will generally afford prompt relief.

A strip of flannel, or napkin folded lengthwise, dipped in hot water, wrung out and then applied around the neck of a child that has the croup will sometimes bring relief in ten minutes.

Hot water taken freely about half an hour before bed time is helpful in the case of constipation, while it has a most soothing effect upon the stomach and bowels. This treatment, continued a few months, with proper attention to diet, will cure any curable case of dyspepsia — (*Practitioner*).

BRITTLE NAILS — An ointment of 60 grains of oleate of tin to 1 oz of ointment of rosewater is said to be an efficient application to the finger nails when brittle or marked with spots and ridges.

FLATULENCE. — Flatulence, especially that form so common in old people, and due to an atonic condition, is often relieved by the old fashioned aloes and assafoetida pill, 1 grain of the former with 2 grains of the latter. It is often of value to add $\frac{1}{4}$ of a grain of freshly powdered nux vomica — (*Practitioner*).

CASES OF GYNÆCOMASTIA

By ROBERT BIRD, M.D., F.R.C.S.,

CAPTAIN, I.M.S.,

Medical College, Calcutta



No 1



No 4



No 2



No 3

THE
Indian Medical Gazette
 JANUARY, 1902

THE LATE SURGEON-GENERAL ROBERT
 HARVEY, I M S

WE deeply regret to have to record the death, at Simla, on the 1st December 1901, from an acute attack of enteritis of Surgeon-General Robert Harvey, CB, MD, FRCP, DSO, the Director-General of the Indian Medical Service.

Surgeon-General Harvey had a very distinguished career in India, where he served Government for over thirty-five years. He entered the I M S in March 1865, being third in the batch, of which Kenneth McLeod was first, and a previous Director-General—James Cleghorn—second. That batch of I M S officers was in a peculiar position in that, owing to abortive attempts at amalgamation of the I M S with the Army Medical Staff, there had been no vacancies in the I M S for five years previously. Consequently several men who desired medical service in the Army had been obliged to go up for the Medical Staff, and in Dr Harvey's batch Cleghorn, Bennett and Harvey himself had all three passed into the A M D, but on the I M S being reopened they resigned the A M D and entered the I M S. Surgeon General Harvey was born at Aberdeen on the 10th March 1842, being eldest son of Alexander Harvey, of Broomhill, Aberdeenshire, a well-known physician. He was educated by private tuition and at Aberdeen and Glasgow Universities, and took the degrees (with honours) M B and C M in 1863, at the age of twenty-one. In 1883 he became M D (Aber), M R C P (Lond), in 1889, and F R C P in 1894. He was also made an LL D of Aberdeen.

Shortly after his arrival in India Harvey saw his first field service in the Bhootan War of 1865-6, for which he received a medal and clasp. He was soon appointed to the Foreign Department and was Residency Surgeon, Eastern Rajputana Agency, from 1866 till 1871. In the latter year he went on the first Lushai Expedition, and was mentioned in despatches. On his return he joined the Central India Horse and remained there for five years, till he became Civil Surgeon of Simla, 1876-77. Shortly after

leaving Simla he was appointed Sanitary Commissioner, Bengal, and two years afterwards Professor of Midwifery in the Calcutta Medical College, which post he held for ten years. During this period he established a wide reputation as a very capable Surgeon and Gynaecologist, was one of the pioneers of the operation of ovariectomy in India, and worked up a very large and lucrative practice in Calcutta. In 1890 his turn having come for promotion to Administrative rank he was appointed P M O of the Peshawar District, and afterwards of the Punjab Frontier Force. During these years he served as P M O of the two Muanzai Expeditions of 1891, being mentioned in despatches and obtaining the D S O, also in the Hazara Expedition of 1891, and the Isazai Expedition of 1892. It was agreed by all who served in these expeditions that a better P M O never had charge of medical arrangements of an army in the field, and it was a source of congratulation to numerous I M S officers that one of the most distinguished of their men in civil employ should, after ten years' most successful work as a Professor of Obstetrics and Gynaecology, be found equally successful in the very different capacity of the Principal Medical Officer of a Field Force. Harvey also at this time published a valuable pamphlet, in which he contrasted the military medical arrangements and experiences of the Muanzai Expeditions with those of the Lushai Expedition twenty years before. We remember him telling us at that time that in his opinion any I M S officer, who had served long in Civil Employ, would find no difficulty in doing the work of a P M O of a Field Force, provided he devoted a week to the study of I A R, Vol VI. Soon after this Surgeon-Colonel Harvey was appointed to act as Inspector-General of Civil Hospitals, Bengal, and it is the experience of all who have served in Civil Employ, Bengal, that a more satisfactory Inspector-General never held that post. It was during this period that the idea was conceived of holding the first Indian Medical Congress. The success of this Congress, held in December 1894 was very largely due to the tact, ability and energy of Inspector-General Harvey and the two secretaries, Drs D M Mon and W J Simpson. Not only did Harvey throw himself heart and soul into the arrangements for the Congress, but he found time to write an admirable Presidential Address and also a paper pleading the claims of

a Pasteur Institute for India and the establishment of laboratories in India—objects which were accomplished a few years later.

In 1895 Surgeon-General Harvey, as he had then become, was appointed Principal Medical Officer of the Punjab Army, and in the Jubilee year of 1897, he coped very successfully with the medical arrangements for the numerous Frontier Expeditions of that year. For this he received the order of the Companionship of the Bath. In the beginning of 1898, on the retirement of Surgeon-General Cleghorn, Harvey was appointed Director-General of the Indian Medical Service, the post which he held until his death.

Surgeon-General Harvey in his time wrote much on Medical and Sanitary Subjects, among the most important we may mention—A Report on small-pox in Bharatpur, 1871, the very valuable Bengal Medico-legal Reports, published in 1872, on the use and abuse of ergot in labour (1881), the use of the forceps in breech cases, 1884, the valuable report on cholera in Kashmir (1895), and his Presidential Address and pamphlet on the Pasteur Institute in the Transactions of the Indian Medical Congress of 1894.

During recent years he has worked hard for the establishment of laboratories in all the provinces of India, and for the improvement of many departments of the Indian Medical Service and all the subordinate medical services in India. Only a few weeks ago a correspondent wrote to us telling of the able speech he made at the recent meeting of the British Medical Association at Cheltenham in pulverising the wild scheme of the sub-committee which suggested the amalgamation of the I M S with the R A M C, a discussion by-the-by which was very imperfectly reported in the journal of the Association.

In conclusion we believe that we echo the feelings of the whole Indian Medical Service when we say that Surgeon-General Harvey was a credit and an ornament to the service to which he belonged, and whether as a physician, a surgeon, a military medical officer or an Administrator we shall be lucky if we look upon his like again.

We have now only to direct the attention of our readers to the letter (at page 30) from a well-known I M S officer on the proposal for a memorial to Surgeon-General Harvey. We invite discussion on the form which the memorial will take, as to the advisability of such a memorial no words of ours are needed.

ANNUS MEDICUS

THE present issue of the *Indian Medical Gazette* is the commencement of its 37th Volume, and we hope to cater for our readers with as much success as has attended our efforts during the past year. In the volume just concluded, we were enabled to publish numerous articles on various subjects in medicine and surgery, which attracted a considerable amount of attention,—and which have been freely quoted in the lay press and in the medical journals of Europe and America. To our numerous contributors, we beg to offer our sincere thanks.

The following subjects have been very frequently dealt with during the past year.—On malaria, we published quite a remarkable number of admirable papers on mosquitos and malaria, on water supplies and malaria, on the habits of mosquitos, on quartan fever, on the flagellar fever of malignant tertian, all of which indicate the large amount of good work in malaria which has been and is being done in India. Then we had excellent papers by Brown, Rogers, and Sen on cerebro-spinal fever—a fever which is now clearly recognised as one of the most fatal of the continued fevers of India. The papers on intestinal parasites by Green and Calvert, following up the investigation we started on this subject are well worthy of attention. On the well-worn subject of the prevalence of typhoid fever in natives of India, we had several papers, including the remarkable one by Lamb. It is now becoming recognised that enteric fever is certainly a fever which affects the Natives, and there is some reason to believe that it is on the increase among them. We cannot entirely agree with the view that it is only more frequently diagnosed, though the more general use of Widal's serum reaction has added a weapon of precision to our resources of diagnosis.

A paper by Captain O'G Lalo, I M S, on the body temperature of, and tuberculosis in, Gorkhas, excited considerable discussion, and we think that it has been established that there is no special proclivity to the disease among that fine race of soldiers, but that in regiments much of its undoubted prevalence is due to overcrowding and the bad ventilation of their barracks, as in the British Army half a century ago. Snakebite is a subject on which we published five papers, and there can be no reasonable doubt that in most of the cases recorded by Colonel Scott Reid Captain P H Chapman and

Dr. Bingley, &c, the lives of the patients were saved by the use of Calmette's antivenene. In some cases the snake was not caught, and this has been used as an argument against accepting such cases as genuine cures, but in the nature of things the snake will seldom be caught, and in many cases we have to rely upon the clinical symptoms to prove the extent of poison injected. Another important fact has been established during the year by the work of Lamb and Hanna in the Bombay Research Laboratory, and that is that to neutralise the full amount of venom injected by a full grown vigorous cobra, no less than forty cubic centimetres of antivenene should be used. Fortunately it must often happen that the snake is able only to inject a small part of its venom, so that one phial of 10 cc may often be sufficient. Should, however, marked symptoms of snake-poisoning supervene, the surgeon should not hesitate to use the full 40 cc.

Following upon the success of our stone number in 1900, we last year published in June and July a very complete "Cataract Special Number" which has been received with much appreciation not only by our readers, but by the medical press of Europe and America, and several of the leading medical journals have devoted special articles to a discussion of the many points raised in it. One thing it has established, viz, the enormous experience gained by surgeons in India in the treatment of cataract, and in the future we may expect the opinions of Indian cataract operators to carry weight, almost to the extent they do in regard to the treatment of stone in the bladder. On stone too we published several valuable articles, especially the one on Assendelft's work by D F Keegan, one of the veteran pioneers of litholapaxy.

Surgery is a subject which our columns have always dealt largely in, and in the past year we have had a large number of admirable papers on many branches of surgery. Among these may be mentioned the remarkable papers on the surgical treatment of elephantiasis by Havelock Charles, Maitland and P Manson. The papers by the former two surgeons will long remain landmarks in the history of the surgery of elephantiasis. The low mortality of this formidable operation will never be reduced under the present low rate of about 2 per cent, and it is scarcely possible for any Surgeon to beat Charles' record of 142 consecutive cases without

a death. Among other surgical papers may be mentioned E H Brown's series of important operations done at the Bhowanipore Hospital. Bird's fine case of intracranial nemectomy, Neve's paper on the radical treatment of hernia, gynaecological operations by T H Sweeny, Duer and Miss M Staley, and Maitland's case of splenectomy. Another feature of the *Gazette*, which we have taken pains to encourage, is the contribution of articles on medicine, surgery, and medico-military matters by officers in military employ. This year we had what has been called a special "China number," in which we collected a lot of papers on experiences in the China War, and quoted the opinions of medical officers, returned from the campaign, on the many and easily-remedied defects of our Field Hospitals. So far as we are aware, the vast amount of experience gained by medical officers as to the defects in the working of the Field Hospitals, and the necessary and urgent improvements, in the Chitral, Frontier and China Campaigns has been more or less left unutilised, and clumsy preparations of drugs and obsolete instruments are still allowed to cumber the overloaded boxes of a field hospital. A committee of practical medical officers is urgently needed to effect the changes necessary to bring our field hospitals up to date, and up to the level of those of other nations in Europe. So much for the past year, we have only now to thank our contributors for the valuable articles they have sent us, and to express the hope that they will continue to do so. To our publishers thanks are due for the liberal way in which articles have been illustrated during the year a thing which the ever-increasing number of subscribers to the *Gazette* has enabled them to do.

In the new year we hope to be able to render the *Gazette* as satisfactory and attractive to our readers, as numerous letters from correspondents persuade us to believe it has been in the past.

LONDON LETTER

THE REPORT OF THE PLAGUE COMMISSION

Time flows so rapidly in these days, and events of moment come tumbling over each other at such a rate that one is apt to lose sight of things which loomed large in view not long ago, and recent history tends quickly to change into ancient history. It was in November 1898 that a Commission was appointed to investigate as

regards India (1) the origin of the different outbreaks of plague, (2) the manner in which the disease is communicated, (3) the effects of curative serum, and (4) the effects of preventive inoculation. The labours of the Commission were practically ended in March 1899, and now, after the lapse of some twenty months the report of the Commission which was recently issued comes as a sort of surprise. It consists of five volumes containing 2,424 foolscap pages. The first four present the evidence, oral and otherwise, collected, and the last, a portly tome of 540 pages, is devoted to the report, which is a *résumé* and analyses of the evidence and a record of conclusions drawn therefrom.

THE WORK OF THE COMMISSION

The work which was set for the Commission to do is indicated by the four questions propounded in the Resolution of the Government of India constituting it. The Commission took a wide view of the interpretation and scope of these questions and practically made them cover every point and detail connected with Indian plague—its history, its introduction and spread, its nature, communicability and means of communication, its mortality, its effect on domestic, social and commercial life, on industry, trade and commerce, its prevention and treatment and even the relation of prejudice and superstition to its management. They held 70 sittings in India and examined 260 witnesses, of whom were asked 27,415 questions, including lengthy statements previously prepared and put in by many of them. They visited many places in India, West, South, East, North and Central, where plague had prevailed, or was prevailing. They saw cases, examined localities, collected statistics, prepared charts and maps, and initiated separate inquiries and bacteriological investigations. They left no stone unturned, the turning of which might help their quest, and these ponderous volumes constitute a detailed and well-arranged record of the diligent and laborious inquiry which they conducted.

THE ORIGIN OF THE PLAGUE

As regards the introduction of plague into Bombay in the rainy season of 1896, it was found impossible to obtain exact testimony. The conclusion arrived at was that it reached that city by sea, but whence there was no evidence to show. The idea of the Bombay outbreak having been caused by the advent of pilgrims from

Kunwar and Gujwal where plague is endemic is discredited for reasons which seem to be sound and convincing. The spread of the disease throughout India is traced and described in great detail, and the facts recorded leave no doubt that human agency was the main instrument of dissemination, and that the importation of persons suffering from the disease was in the great majority of instances the cause of outbreak. In response to such importations many localities remained unaffected, others developed indigenous cases tardily and after considerable interval, and others "took," the disease rapidly and severely.

THE MORTALITY CAUSED BY PLAGUE

The total mortality caused by plague up to September 1899 is put down at 430,500 deaths. This figure is probably considerably below the actual truth. It represents a ratio of 15 per 1,000 of the population of India, or 5 per 1,000 per annum which, as compared with other causes of mortality, represents an inconsiderable loss of life.

THE MANNER IN WHICH PLAGUE IS COMMUNICATED

On this subject evidence is presented and discussed in great elaboration. The disease is known to attack men, rats, mice, guinea-pigs and squirrels, rabbits are comparatively insusceptible, and cats less so. The larger animals seem to be immune, and still so are birds. The disease thus constitutes an interesting problem in comparative pathology. The bacteriology of plague is displayed in great detail, and the *bacillus pestis* is very properly made the pivot on which questions relating to communicability are made to revolve. Diagnosis by means of cultivation, inoculation and agglutination is fully discussed. The conclusion is stated that "no practical value attaches to the method of serum diagnosis in the case of plague." The mode of entrance of the bacillus into the human organism is obviously a cardinal point in considering infection. Entrance through breaches of surface is held to be indisputable, but to what extent this occurs it is impossible to estimate. In all bubonic cases this mode of access is held to be probable. Entrance through the stomach and intestines is pronounced to be very rare. The question of entrance through the respiratory passages is obscured by difficulties and doubts which require further investigation. The mode of infection of rats also requires additional inquiry. Transference of virus by

suctorial insects is held to be very doubtful in the case of both men and rats. The incubation period of plague is known to be short—seldom to exceed five days. The danger of direct infection from plague patients is considered to be slight, but in the case of primary pneumonic plague direct infectivity is more common. The manner in which the bacillus leaves the body is an important consideration. In bubonic cases the organism is, so to speak, imprisoned in the lymphatic system and suppurating buboes do not contain many bacilli. Some may escape through this route and through other breaches of surface. In pulmonary cases the sputum, in which bacilli swarm, is infective, and in secondary pneumonias the respiratory surface may also shed them. Cutaneous rashes in septicæmic cases furnish a portal of exit. Shedding through the intestinal and urinary routes does not appear to be a common occurrence, but the saliva and buccal mucus seem to be occasionally infective. How the bacillus leaves the rat is more obscure. Habitation and clothing may be soiled and become infective. On the whole the risk of direct infection from patients is held to be small except in pneumonic and septicæmic cases, which fortunately constitute the exception. House infection is considered more potent and frequent than personal infection. The agencies by which the spread of plague is accomplished and the conditions, personal, social, sanitary and climatic, which favour or impede its dissemination are discussed at great length and with conspicuous intelligence and discrimination. The clinical, pathological and therapeutical aspects of the disease are also handled with ability by Dr Fraser.

THE EFFECT OF CURATIVE SERA

This question is also very fully gone into and abundant evidence is adduced regarding the use and effect of the various precautions which have been made by Yersin, Lustig, Haffkine and others. The conclusion stated is very qualified, and though this mode of treatment is considered to "hold forth a prospect of ultimate success," such success has not been attained by the preparations which have been tried. Other methods of preparation and modifications of use are obviously and confessedly requisite.

THE EFFECTS OF PREVENTIVE INOCULATION

This section of the report was prepared and published some time ago, and the conclusions

stated, which are, on the whole favourable, and the grounds on which these were based must be familiar to Indian readers and need not be repeated.

MEASURES FOR THE SUPPRESSION OF PLAGUE

These are considered systematically and fully in the light of all the knowledge that has been gained regarding the nature of the disease and the experience that has accrued respecting its management, recommendations are formulated on the basis of that knowledge and experience, including suggestions regarding the reorganization of the sanitary department in India. To summarise this section would be beyond the scope of this communication.

GENERAL CHARACTER OF THE REPORT

The report, from which these nibblings have been cursorily snapped, is beyond doubt a most able and valuable record, and will always constitute a conspicuous landmark in the history and study of plague. It is admirably arranged and indexed, and although very voluminous the information which it contains is easy of access. It ought to be extensively distributed and very, carefully read and assimilated in India.

K McL

21st November 1901

Current Topics.

HORACE HAYMAN WILSON

THE famous Indian Medical Service Officer whose career we propose here briefly to sketch is one who acquired his reputation as indeed did several others, outside the sphere of purely medical science.

Horace Hayman Wilson, the great Orientalist and Sanskrit scholar, was born on 26th September 1786, was educated in London, and commenced his medical studies at St Thomas' Hospital in 1804. In the year 1808 he was nominated an assistant-surgeon on the Bengal Medical Establishment. While on the six months' voyage out to India he began his Oriental studies by learning Hindustani. He appears before entering the service to have specially studied chemistry and metallurgy, as he was almost immediately appointed assistant to John Leyden at the Calcutta Mint, and in 1816 he became assay-master. He was early drawn to the study of Oriental languages, excited thereto, as he records, by the example and biography of Sir William Jones. In 1813, he published his first Sanskrit text, and so early as 1819 he completed

the first Sanskrit-English Dictionary, which for half a century remained the standard work on the subject. During nearly the whole of his life in India, Wilson was Secretary to the Asiatic Society of Bengal. He retired in 1832, having been selected to fill the chair of Sanskrit at Oxford. He was elected F R S in 1834 and was a member of numerous foreign learned societies. He died in London, 8th May 1860. Most of his valuable Sanskrit manuscripts are now in the Bodleian Library.

OUR FORTHCOMING SPECIAL MEDICO-LEGAL NUMBER

ENCOURAGED by the success which has attended our two "special numbers" on stone and on cataract, we propose this year to bring out a special number entirely devoted to medico-legal and forensic medicine. It has been our aim in the former two special numbers to select a subject on which we medical men in India could claim to speak with weight and authority. That this has been proved to be the case with stone and cataract, will scarcely be gainsaid, and we believe that if we succeed in gathering together the great and often unique experiences of chemical examiners, police surgeons and civil surgeons in India on medico-legal matters we should be able to produce a number as unique and characteristic as the two which have already been published.

Every one of any experience in India is aware that there are many aspects of crime which differ widely from the experiences of European nations. Every civil surgeon in India must necessarily in time become something of an expert on such a subject. Therefore if civil surgeons will help us by collating their experiences a very valuable collection of articles will be the result.

It is now many years since much has been done in this respect. Little, far too little, has been added to the well-known medico-legal records of Norman Chevers, Robert Harvey, Coull Mackenzie, and Kenneth McLeod. The subjects which might be dealt with in such a special number are infinite, and we shall only mention a few of them, *e g*, hanging, methods, causes, sex, &c. drowning, poisoning, methods, drugs used, arsenic, opium, &c., &c., vegetable poisons, statistics thereof, detection, methods of torture, infanticide, abortion, prevalence of, methods of, insanity, &c. We hope that medical men with special experience on these subjects will favour us with papers. It is proposed to bring out the special number about June, in which case we should be obliged if medical officers would communicate with us at once, indicating the subject they propose to deal with. All such papers should be in our hands early in April.

Already we have received promises of support from several medical men in different parts of India, and shall be glad to receive more.

KIDNEY DISEASE IN MALARIA

THERE is perhaps no part of the morbid anatomy of malarial fever which has of recent years been less studied in India than affections of the kidney in that disease.

Of recent years much work has been done at this question by Italian and American observers, and a consideration of their writings would lead one to suppose that malarial affections of the kidney were more common than is usually understood to be the case.

Some sixteen years ago Dr J E Atkinson, FRS, IMS, in our columns (*I M G*, November 1885), gave the results of an inquiry into Bright's Disease of malarial origin, which may be here summarised.

"Transitory albuminuria, in the case of fever, is due to intense visceral congestion, and it may persist in the intervals. The usual form of malarial nephritis is the tubal and diffuse variety, contracted kidney may occur as an advanced stage of malarial nephritis. It is altogether improbable that this form of malarial renal disease ever occurs primarily as purely interstitial nephritis. These changes may be induced by any form of malarial fever, though they more commonly follow classic intermittent fever. The tendency of the lesion is towards recovery, but from the persistency of the paludism chronic Bright's Disease may be produced."

A few years ago we examined a series of about 200 cases of acute and chronic malarial cases, during an autumn fever season at Bhagalpur, and found only 5 per cent which showed even a trace of albuminuria by ordinary tests. This is in marked contrast to the figures given recently by Thayer of Baltimore, who found albuminuria in no less than 46 per cent of his cases. Manson says the urine is "sometimes albuminous." Leonard Rogers, in his examination of the very advanced cases of malaria known as *kala-azar*, only found albumen in a "small proportion of cases," and usually in dropsical cases. Briault (*Maladies de Pays Chauds*, p 333) notes that in ague attacks there may be "a transient albuminuria," but has found albumen and casts in cases of paludal cachexia. Liveran notes albuminuria as a complication in conjunction with other signs of chronic paludism. Dr Daniels found no less than 226 cases out of 926 *post mortems* in which there was evidence of disease of the kidneys.

The subject is well discussed in a recent paper (*American Journal of Medical Sciences*, October 1901, p 426) by Dr J Ewing, the Professor of Pathology at Cornell, New York. He commences his paper with the remark that "the frequent occurrence of renal lesions in malarial fever was described long before the discovery of the malarial parasites, and has been constantly recognised throughout the progress of our knowledge of the disease." . . . on the evidence collected by Rempicci in Italy and Thayer in

America one may now state with confidence that albuminuria is nearly constantly present in pernicious festivo autumnal infectious and is frequently observed in the milder tertian cases the more severe urinary signs can be safely attributed to the malarial infection only when arising in the course of a pronounced acute seizure

"Recovery has usually followed the acute symptoms, but Kelsch and Kiener, Laveran, Marchiafava, Bignami, and Thayer have described various types of chronic nephritis occurring in long established or chronic cases of malaria"

It seems certain "that during severe malarial infection a true exudative nephritis is sometimes excited In fatal cases of pernicious malaria the lesions observed have been those of a severe acute degeneration of the cortical tubule cells, with moderate exudation of albumin into the tubules and glomeruli"

The question of the causation of this nephritis is by no means settled Dr Ewing's previous experience and that of numerous Italian workers was that "the nephritis has been clearly of toxic origin, while the number of parasites found in the kidney has been small, although they were very numerous in other tissues"

This view has been summed up in the following words by Marchiafava and Bignami, in their recent article on malaria in the *Twentieth Century Practice of Medicine* —

"As to the pathogenesis of the renal lesions in malarial infections, we are at present able only to form theories The knowledge of the parasite has so far thrown no light on the pathogenesis of the nephritis In pernicious infections very few parasites are found in the kidneys even when the changes in the epithelium may be so grave as to lead to necrosis From this fact we may infer that the lesions are due not to a localization of parasites in the renal capillaries, but to some toxic substance eliminated by the kidneys"

More recently Dr Ewing had a case in a young girl who developed malaria at Long Island, which seemed to him to require a reversal of the above quoted opinion The question is an interesting one, and we may echo the opinion given by Chevers many years ago that "the whole subject of renal disease in India would amply repay some years of diligent research"

A MEDICO MILITARY JOURNAL

We have received the first copy of the recently started "*Journal of the Association of Military Surgeons of the United States*" In our last issue we reviewed at length the ninth volume of the transactions of this Association It has recently been decided to issue a quarterly or monthly Journal devoted to military medicine, surgery and sanitation, a long-cherished aim of the more active members of the association The Journal will at first be published quarterly, the contents will consist of reports on the annual meeting of the association, original articles,

memos, translations and abstracts Much attention will be paid to inventions and advances along medico-military lines, and the personal phase of medico-military service will receive special consideration The "mission of the Journal will be to encourage the development of military medicine, to inspire progress in military surgery, and to add to the effectiveness and influence of the military medical officer"

The first number consists of the minutes of the meeting at St Paul last July of the association, notices of many deceased medical officers, and a large number of papers on medicine and surgery read at the meeting Then follows several articles of considerable interest, notably the one by Captain C E B Flagg, Assistant Surgeon, on "Immediate Colotomy in Gunshot Wounds of the Abdomen" Captain Flagg is an ardent advocate of immediate interference in such cases, he does not approve of what he calls the "accepted military way of determining whether abdominal viscera are wounded or not by subsequent events"

He points out that in six great wars from the Crimea to the Japan-China War there were recorded 5,490 penetrating wounds of the abdomen, with 3,649 deaths, or a mortality of 61 per cent, which is 4 per cent less than the mortality of the same wounds in the recent Spanish-American War, where the small calibre bullets, too, were used We may remember that in these wounds Mr Makin (*Surgical Experiences in S African War, Chapter XI*) remarks that "operative surgery scored but few successes," the failure being referred to the severity of the local injury and to the operations being often undertaken at too late a date Captain Flagg, however, strongly advocates the immediate operation, the only reason for declining being want of experience in abdominal surgery on the part of the Surgeon "not lack of time or difficulty in securing asepsis"

In conclusion, we wish the new journal every success, except to some extent the *Indian Medical Gazette*, there is no journal in English which devoted itself to military medical matters, and it is exceedingly creditable to the military surgeons of the United States Army that they have had the pluck and enterprise to start such a journal

May we hope that the R A M C will some day start a similar periodical?

THE CURATIVE VALUE OF LUSTIG'S SERUM IN PLAGUE

HOPE springs eternal in the breast of every therapist, but only too often in the history of medicine has that hope been falsified Sir Ranald Martin, I M S, is credited with the saying that every new 'cure' or method of treatment has succeeded in the hands of the man who introduced it We have recently read through a volume of papers consisting of 90 large pages,

compiled by Major W E Jennings, M B, I M S, the special medical officer for plague operations in Bombay Presidency. This volume is a collection of most of the articles which have been written by various medical men on the value of Lustig's "curative serum" in cases of plague. We may at once admit, after reading the admirable special pleading of Dis N H Choksy, Polverini and May, that the statistics indicate "that this form of treatment has given more encouraging results than any other" in plague. But we also regretfully admit that, in our view, this is the most that can be said for this serum treatment. Except in the case of the antitoxin against diphtheria, it is probable that no serum method has been more thoroughly investigated than this of Professor Lustig. The reports are exactly what such should be, they are careful, honest and impartial, and every fact and argument for and against the special efficacy of this treatment is clearly detailed and discussed, yet the impression left on the mind of the reader must be, we think, that the case is non proven.

It is probably that if Major Jennings had had the time to give us a resumé of these reports, instead of merely reprinting them *in extenso*, the report as it stands would have been more valuable, as it certainly would have been more interesting. The compiler, however, in his short preface allows us to get a glimpse of what his own views are on the matter, and after five years of hard work against plague, no man is better qualified to pronounce an opinion. In the preface, Major Jennings tells us that, since the separate publication of these papers and during the winter epidemic of 1900-01, a further series of experiments were conducted with the serum on the alternative system, every alternate one of 206 consecutive admissions being placed in the serum group, the others serving as a control group for comparison. It is to be regretted, says Major Jennings, that there was not enough serum for a larger number of experiments, owing partly to an unavoidable delay in the construction of a suitable "venesection jacket" for new and restive horses, and partly to the fact that the unusual virulence in the type of the disease, during this 1900-01 epidemic, rendered it necessary that at least three times the quantity of serum that was found sufficient in previous epidemics had to be administered before any visible effect was produced in each case. A large proportion of the cases were septicæmic in character on admission, and 63 per cent had multiple buboes against an average of only 14 per cent in the preceding epidemics.

Bacteriological examination demonstrated that the proportion of cases which were septicæmic in character on admission was practically identical in each of the above groups, that in the serum group being 43 per cent, and in the control group 45 per cent. Of the former, 104 in number, 23 recovered and 81 died, of the

latter, 102 in number, 21 recovered and 81 died. This certainly gives but a small percentage of gain in favour of the serum method, but on the other hand the clinical histories of many of the fatal cases in the serum group show that life had been prolonged and acute symptoms ameliorated to a considerable extent.

This is not much, but in a fatal disease like plague we have to be content with little. Nevertheless figures and facts such as these are not sufficient to establish the serum of Prof Lustig on any sound basis so as to deserve the name of "curative." A successful method of treating plague still remains to be discovered, at the best Prof Lustig's serum can only be called hopeful.

THE UNUSUAL VIRULENCE OF PLAGUE IN BOMBAY IN 1900-01

WE have above noticed a series of articles dealing with the curative value of Lustig's serum, and since writing it we have received another pamphlet dealing with the same subject by Khan Bahadur Dis N H Choksy, who has become recognised everywhere as the Champion of this therapeutic method. Dr Choksy's pamphlet is a very able one and he deals honestly and impartially with the evidence for and against the use of Lustig's serum in plague. But the most remarkable as well as interesting portion of his recent pamphlet is the careful account Dr Choksy gives of the unusual and special virulence of the epidemic of the past year in Bombay. There can be no doubt in the mind of the reader after a perusal of this pamphlet that the epidemic of 1900-01 was exceptionally virulent, not in the numbers attacked, but in the intensity of the clinical symptoms.

These characteristics are thus defined by Dr Choksy —

- (a) Rapid extension of the local infection with multiple contiguous buboes
- (b) Intense and rapid septicæmia
- (c) Irregular course, prolonged duration, frequent relapses due to reinfection or extension, indolent buboes remaining enlarged for a long time or suppurating very late and numerous complications
- (d) Tardy convalescence, or marasmus from secondary infections, or death from plague pyæmia and consequent toxic degenerations of the internal organs
- (e) Greater resistance to the action of serum

The rapid extension of the local infection with multiple contiguous buboes was the most noticeable feature observed. Whereas in previous epidemic years the proportion of multiple buboes was only about 14 per cent (in 9,500 cases analysed), in the last epidemic this figure rose to no less than 63 per cent. Moreover the proportion of cases of pneumonic plague rose from about 2.4 per cent to 4 per cent, and "plague without apparent buboes" had a ratio of 14.2 per cent instead of about 2.6. Triple buboes, femoral inguinal and iliac, were a very constant feature in recent cases, and almost invariably it

was found, *post-mortem*, that numerous deep-seated buboes were present, deep iliac, lumbar and retro-peritoneal

The second characteristic of the epidemic was the intensity and rapidity of the septicæmia. Out of 165 septicæmic cases 45 per cent were so at time of admission to hospital, and of these there were only 4 recoveries. The third feature noted by Dr Choksy was the irregular course and prolonged duration of the attacks. Usually in plague it is considered that a survival till the tenth day is indicative of recovery, but in the last year's epidemic secondary and tertiary buboes appeared at intervals till the length of the illness could be reckoned in weeks instead of days, temporary improvements were very delusive and no favourable prognosis could be given for many days. A remarkable feature too were the indolent buboes, and their late suppuration, such buboes were even opened so late as the 48th day of illness. As regards complications their extent and severity bore no relation to what was observed in former epidemics, they were more common and more severe. Among the more serious complications we may note "coffee-grounds vomiting," meningitis, secondary pneumonia, hæmaturia, marasmus, convulsions, peritonitis, &c. In many cases, after the case seemed to have taken a favourable turn, it suddenly retrograded, and marasmus set in accompanied by prostration, and a breakdown of the nervous system, rapid emaciation, enfeeblement of mind, and localised or even bulbar paralysis. This is a remarkable and very undesirable phenomenon in a disease which for over five years has now ravaged Bombay. In view of the above it will scarcely be surprising that the results of the use of Lustig's curative serum were more disappointing than the previous experiences of it seemed to warrant. "These results," says Dr Choksy, "fully justify the conclusion that, however strong the serum, there is a limit to its efficacy, and if the infection goes beyond a certain stage there is no possibility of cure. In these sera we do not possess *all* the means that are necessary to neutralise the effects of these poisons."

It was not that the serum was not given a full trial, it was also pushed far beyond the limits given in previous years. Formerly it was found that an average of 400 cc was sufficient to cure many cases, but in the recent epidemic in 19 cases over a thousand cc were given and only 5 cases recovered. In some cases the following heroic doses of the serum were even given — 1580 cc, 2405 cc, 1150 cc, 1500 cc, 1070 cc, 2205 cc, 2150 cc, without effect. The serum was not only pushed in this way, but it was used intravenously, and the practical effect was the same. In septicæmic cases treated by serum the mortality rate was in one series 96.6 per cent, and in the same kind of cases treated by other methods 98 per cent, this is but a small ad-

vantage, but it is something. In the non-septicæmic cases the advantage of the serum method is somewhat better, but still small, in them the serum cases had a mortality of 56.5 per cent contrasted with 61.5 in non-serum cases. We note also that in about 100 cases Professor Gajoi's liquor iodi terebinthi was used. It had no effect at all in septicæmic cases, and it is not possible to draw any sound conclusion from the few cases of other forms of the disease in which it was used. We commend Dr Choksy's pamphlet to the attention of our readers.

THE truly remarkable case which we publish in this issue, where Lt-Col Denny, I M S, removed 55 rupees from the stomach of an Afghan, is certainly worthy of record in Gould's *Curiosities of Medicine*. Indeed, there is no case mentioned by Gould which is more wonderful.

Gould writes "the variety of foreign bodies that have been swallowed either accidentally or for suicidal or exhibitional purposes is enormous." In the *India Journal of the Medical and Physical Society* [Vol 1 (1837), p 291] a case is quoted of a "ravenous galley-slave," in whose stomach 52 foreign bodies were found, and a case is quoted where in another galley-slave's stomach there were found (apparently *post-mortem*) no less than 52 "pieces of money," weighing 1lb 10½ ounces. In the *Lancet*, (Vol 1, 591, 1835) a case is given of a man who swallowed seven half crowns, and forgot all about it, till on taking a purgative for abdominal pain seven months afterwards the seven coins were passed *per anum*. Billroth published a case where a row of artificial teeth were removed by gastrotomy. There is also recorded a case where a man swallowed a box containing despatches from Napoleon, and the man was kept a prisoner till the box was passed by the bowel.

THOSE of our readers who read the articles on the history of the Bengal Medical Service from the pen of Lieut-Col D G Crawford, M B, I M S, in our issues at the beginning of last year will see with pleasure that he is continuing to work at the subject. The first instalment of his article on Pre-Service Surgeons is given in this issue and will be found of the greatest interest. May we express the hope that Lieut-Col Crawford will see his way to the publication in book-form of his notes on the history of the Bengal Medical Service? We are sure many of our readers would be glad to have such a book.

WE are very glad to see that a Malaria Convention is to be held in Nagpur, C P, from 27th December. The credit of starting this Convention is due to Colonel Scott Reid, I M S, the Administrative Medical Officer, C P, and Major Andrew Buchanan, I M S, M D. The members of

the Royal Society's Malaria Commission will attend, and numerous medical officers from other Provinces. We wish the Convention every success.

WITH regard to the accident during the performance of litholapaxy described in our November issue by Major W. B. Lane, IMS, Lieutenant-Colonel W. K. Hatch, IMS, FRCS, informs us that in a considerable number of operations on stone he only had this accident occur once, and he treated it exactly in the way described by Major Lane, *viz.*, a supra-pubic operation, and clearing out of the grooves of the lithotrite.

MAJOR C. H. BEDFORD, IMS, MD, D.Sc., has now in the press for immediate publication, (1) a Synopsis of Practical Chemistry (Qualitative), Inorganic and Organic, and (2) a "Practical Compendium of Urine Analysis, arranged in tabular form." Both books will be eminently practical, and every test and reaction has been specially repeated for the purpose of these books. They will be published by S. K. Lahiri & Co., College Street, Calcutta.

IN Mauritius, according to M. M. deGrandpré and de Charnay (*Les Moustiques*) the *Anopheles Costalis* has been found to be the definite host of the malarial parasite in that island, whereas the *Mauritanus* has no relation to human malaria. The same observers claim to trace the complete life-history of the larval stage of the nematode, *I. nocturna* in the thoracic muscles of *Culex annifer*. (*Nature*, 14th November.)

PROPOSED MEMORIAL TO SURGEON GENERAL R. HARVEY, IMS

We publish with pleasure the following letter, which we believe will voice the feelings of all I. M. S. Officers in India—

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—It is a rare occurrence for a head of our service to die in harness, and it is even rarer for the Director General to have the unique character of Surgeon General R. Harvey, C.B., D.S.O. Socially we have never had a more popular or hospitable chief, generous and charitable in his judgment of others, genial and happy tempered, accessible to all, and ever ready to help the members of his own profession and service. Though he entered the service as far back as 1861, he was as active and receptive of recent scientific progress as men with only half his years. Seldom do we come across a more versatile official, who made his mark in so many and so varied executive and administrative appointments both in civil and military life. Successful as a medical practitioner, consultant, operative surgeon and teacher with the pen of a ready writer, he adorned everything he took in hand. That he was a leader of men in his profession was recognised by the Government, who made him Director General and Honorary Surgeon to the Viceroy, who conferred on him the decorations of C.B. and D.S.O. and who it was hoped and expected would grant him the honour of knighthood in the near future, as a slight recognition of his long and meritorious services to the State.

His abilities were recognised by the medical profession in India by whom he was unanimously elected as President of the first Indian Medical Congress, of which he was the life and soul, and for the success of which he worked so hard. His intellectual ability and professional worth were duly

recognised by the Royal College of Physicians, London, and by the Universities of Calcutta and Aberdeen, as well as by various learned societies. Is it fitting that his many-sided character should go unrecognised by his service alone?

(1) I beg to propose that the members of the Indian Medical Service subscribe towards a permanent memorial for this distinguished Director General, (2) that the Editor, *Indian Medical Gazette*, receive the subscriptions, (3) and that the subscriptions range from Rs. 25 for Lieutenants and captains, to Rs. 50 and over for majors and more senior officers.

I invite discussion as to (1) whether General Harvey's numerous friends and admirers outside our service should be permitted to join in this memorial, and (2) as to the form this memorial should take.

We have a Sir Ronald Martin Memorial Gold Medal for the best surgeon, on probation in tropical medicine at Netley. Might we not have a Robert Harvey Memorial Prize or Scholarship for the I. M. S. candidate who heads the list of the entrance examination at Burlington House?

I remain, &c.,
I. M. S.

(We shall be glad to collect and acknowledge subscriptions and publish proposals from our readers.—Ed., I. M. S.)

Reviews

Alcoholism a study in Heredity—By G. ARCHDALL REID, M.B., FR.S.E. London: T. Fisher Unwin, 1901.

THOSE who have read Dr. Archdall Reid's most valuable and fascinating book on "The Present Evolution of Man" will be prepared for the line of argument used in the present volume, entitled "Alcoholism, a study in heredity." Many of our readers too will have followed a recent discussion of Dr. Archdall Reid's views in the *Lancet*. We therefore most heartily welcome this volume. To the biologist it is interesting for its logical following out of the plain tendencies of evolution, to the student of sociology for its manfully grappling with a question of the first social importance, to the advocate of temperance for its plain speaking as to his methods while agreeing absolutely as to the evil effects which both deplore. The fundamental facts on which all the logic of Dr. Archdall Reid's arguments turns are (1) that a craving for alcohol, more or less deep, does exist in most men, (2) that evolution is still in operation in the human race, (3) the non-transmission of acquired characters.

In the first chapter and again in Appendix A the great antiquity of drinking habits is clearly proved in detail, and that for some fifty centuries punishments have been inflicted on drunkards and attempts have been made to diminish or abolish the consumption of alcohol, with the only result that it is now more widespread than ever. The next chapter goes on, on lines familiar to those who have read "The Present Evolution of Man," to show that evolution has by no means ceased as regards man, but only shows itself in other lines. The race is no longer necessarily to the swift, nor the battle to the strong, but a great agent of elimination is in operation, *viz.*, zymotic disease, and it is most significant that every race is resistant to every

deadly disease strictly in proportion to its past experience of it, e.g., the negro of West Africa is more resistant to malaria than the Englishman, and the Englishman much more resistant to consumption than the Australian blacks, who are rapidly perishing of it. The Englishman now increases and multiplies in spite of phthisis in crowded cities, while the Red Indians, among whom it was recently introduced, are being wiped out by it. This is the greatest tragedy of human history, the extermination of the races of the new world by diseases introduced from the old. Dr. Reid thus summarises his introductory remarks—"the four main facts which I have endeavoured to drive home have been (1) that characters acquired by the parent are not inherited by the child, (2) that evolution results from the *stringent* elimination of the unfit, (3) that when the elimination which has caused the evolution of any character ceases or nearly ceases, that character undergoes degeneration, and (4) that degeneration is due to atavism, a process of reversion which, step by step, retraces the previous evolution till, if it be continued long enough, that more or less remote ancestor is approximated to in whom the character did not exist."

Chapter VII divides drinkers of alcohol into, roughly, three classes, (1) those who drink to satisfy thirst, the alcohol only making the water more palatable, these drink for the same reason as they eat, and add alcohol to water as they add sauces to the meat. (2) A second class drink intoxicating beverages not from thirst so much as for the sake of the flavouring agents. They delight in the taste of these agents as a school-girl delights in the taste of chocolate. These men are connoisseurs, and are rarely drunkards. (3) the third class drink, not for thirst or the gratification of the palate but to produce that mental effect which in its extreme forms is called drunkenness. The real drunkard is not "a thirsty soul," he drinks not because he is thirsty, but because he craves for the mental state produced by alcohol. *Men, as a rule, drink in proportion to their desires*, and the deep drinker, generally speaking, is one so constituted mentally that deep indulgence is delightful to him. It is not a question of self-control, as ardent temperance advocates argue, the moderate drinker keeps sober because deep indulgence is not agreeable to him. Let the reader ask himself—Is he temperate only because he exercises self-control? No, rather because he has no desire for deep indulgence. It is not lack of opportunity either that keep men sober, it is merely lack of inclination. Therefore as alcohol is an undoubted poison it has eliminated and is eliminating year after year from the race a great number of people so constituted that intoxication affords them keen delight, leaving the perpetuation of the race in great measure to those on whom intoxication confers little or no delight. Many "potential drunkards," that is, those capable of enjoy-

ing deep indulgence escape, they are saved by lack of opportunity or brave resistance to temptation.

To turn, with our author, now from *a priori* reasoning to historical fact, we find that many races—Greeks, Italians, Spaniards and Portuguese—have for centuries been supplied with cheap and abundant supplies, others have been less inflicted, as the Northern Europeans, yet again others have no experience or little of alcohol, as most savages. Yet to-day the most sober races are the Southern Europeans, the Northern Europeans are much less so, and alcohol runs literally like wildfire through races into which it has been introduced and destroys them, as the Red Indians of North America. "*Every race is, in fact, temperate strictly in proportion to its past sufferings through alcohol*." It is not merely a question of the strength of liquor, for did the craving exist intoxication could be produced by consuming larger quantities. These races of South Europe are sober plainly not because they resist temptation (for they are by no means austere in other respects), but, through inclination, they have no desire for deep indulgence. But as ancient writers abundantly testify deep indulgence existed among these races centuries ago. How then are they now sober? Plainly by the continued elimination of those of drank deeply, *i.e.*, had the craving for deep indulgence, and the greater survival and continuance of the race by those who had not that inclination.

To-day savage races are proverbially intemperate, even as ancient Europeans used to be. Supply to-day abundant alcohol and the race of Esquimaux or the Australian blacks can certainly be exterminated. We have therefore seen that Dr. Archdall Reid believes that races are now sober in exact proportion to the previous amount of drunkenness which existed in them, and that this sobriety, in the presence of abundance of alcohol, is due simply to the non-desire for indulgence, and that again this sobriety can only have resulted from the elimination of those who exceeded, leaving as survivors those who had but little inclination towards indulgence. It follows then as a biological law from this that if there were no agent producing elimination no race with a non-desire for indulgence could arise. Hence it follows logically that if, in spite of 50 centuries of failure, temperance advocates succeeded in abolishing not the drinker, but drink itself, the last state of that nation would be worse than the first, for if those who are prone to indulgence are not rigidly eliminated a race must arise with an increasing number of those having that craving, and as it is absolutely impossible to prevent men making alcohol, a race would soon arise in whom a large number possessed the inborn craving or rather capacity for deep indulgence, and it is not likely that men possessed with this capacity would allow the total prohibition of the thing for which they

craved, hence alcohol would certainly be secretly manufactured in large quantity, and ultimately that race would become largely a drunken one, till in time again Nature eliminated not drink but the drunkard, and the present state of affairs would occur again.

The plain fact therefore indicated with irresistible logic by Dr Archdall Reid is that the temperance methods of the past 50 centuries have been and must naturally be total failures, and that there is only one way for a race afflicted with a capacity or desire for deep indulgence to attain to the sobriety, the moderation as regards alcohol, of the Southern European races, and that is the elimination of the drunkard.

This sounds to the modern ear brutal, it is so, but it is the only way. Men will not be made sober by laws, but only by the development of an inborn and therefore transmitted lack of desire for deep indulgence. This inborn trait can only be developed by the survival of those who possess it, and then handing it down to their children, combined with the rigid elimination of those possessing that desire. This is Nature's way, and has proved successful in the case of the Southern European nations. Dr Archdall Reid also states that if we could prevent the marriage and procreation of children by drunkards this end could be much more easily attained. This too will be denounced as immoral and brutal. The alternative, however, *z. e.*, the procreation of increasing number of future drunkards, is still more immoral and horrible. At the most we may say that Dr Reid's idea is impracticable at the present day, but that it is theoretically sound no one can well deny.

We have thus rapidly reviewed this important and most interesting book. We have necessarily omitted much of great medical interest, *e. g.*, the opium question, the C D Act, and the great question of disease selection, we have confined ourselves to a consideration of his main thesis. With it we have no hesitation in stating that we feel bound to agree. We strongly recommend the volume to all our readers, it is a book which will fascinate the reader, and he will find himself carried along by the logic of our author's reasoning to be compelled to believe in the views set forth. For scientific readers numerous appendices are given, which deal with in greater detail all the scientific aspects of the questions raised.

In conclusion, we say the book is a brave one, and we believe a convincing one. It is one to which it will be impossible for the advocate of temperance to ignore, and we fully expect that it will largely influence medical opinion on these questions for many years to come.

Water and Water-supplies.—By JOHN C THRESH, M.D., D.P.H., 3rd Edition, Revised and Enlarged. London 1901. REBMAN, LTD.

IN the *Indian Medical Gazette* for October 1897 (p 379), we had the pleasure of reviewing

the second edition of this book and of strongly recommending it to our readers. After a perusal of the third and revised edition we have no hesitation in again recommending it as one of the most convenient, useful and ably written books on the subject of water and water-supplies.

The new edition is well brought up to date and contains ample account of all that has been done within the past few years on the subject of the safeguarding of our water-supplies.

For the benefit of those who do not possess the former edition we may briefly indicate the contents of the present work. The first three chapters deal with the composition and properties of water, and its classification with rain and rain water, storage, &c., with surface water and its characteristics according to the geological formations from which it is derived. Then is given a discussion of the value of ponds, lakes and reservoirs, with accounts of the water-supplies of cities like Glasgow and Liverpool, and analyses of public water-supplies from uplands and moorlands. The next chapters deal with subsoil water, its qualities and dangers, with natural spring waters, as those of Clifton, Bath, Buxton, etc. Then comes an admirable chapter on wells, deep, shallow, and subsoil, artesian wells, and the nature and quantities of water so obtainable. Chapter VII deals with catchment basins, drainage areas, self purification of rivers. Chapters VIII and IX deal with the quality of drinking water, and gives typical analyses of what constitutes a good water, the effects of impure water upon health, &c. Chapter X is a remarkable one, and of the greatest importance, in that it deals with the interpretation of water analyses, and points to the erroneous conclusions which may be drawn from both chemical and bacteriological analyses—a subject of special interest. In the chapter on the pollution of drinking water, the dangers which may arise during distribution of water, or at its source, are clearly pointed out and explained. The chapter on the softening of hard water is most useful, as are also those of filtration, both public and domestic, and on the construction of wells. Another chapter, which it would be well for the civil surgeon or medical officer of health to read, is that on pumps and pumping machinery. It is clearly written, and a want of special engineering knowledge need deter no one from understanding this chapter, as is also true of the chapter on water storage. The volume concludes with an admirable resumé of the laws relating to water-supplies, which, though they apply to England, are nevertheless the models from which Indian legislation on the subject is drawn. On the whole, we can very strongly recommend this book to all medical men who have to do with water-supplies of towns, cantonments or jails. They will find it an admirable aid to them in enabling them to give

sound advice on many problems of the supply of good drinking water. The volume is well printed and excellently got up.

Text-Book of Pharmacology and Therapeutics.—Edited by W. HALE WHITE, M.D., of Guy's, Edinburgh and London. YOUNG J. PENTLAND, 1901.

THIS volume is the latest addition to the admirable series of text-books brought out by Mr. Young J. Pentland of Edinburgh, of which the great physiology of Professor Schäfer, and Dr. Gibson's excellent Text-Book of Medicine are well known examples. The present volume is devoted to pharmacology and therapeutics and is edited by Dr. Hale White of Guy's, who is well known also as the author of a very useful and popular book on *materia medica*. The volume before us is however only edited by Dr. Hale White, and the various articles are written by him and a band of distinguished therapeutists. The following list of names will indicate sufficiently the class of men to whom Dr. Hale White has entrusted the various chapters. Dr. J. W. Washbourn writes the article on serum therapy, Dr. J. S. Haldane of Oxford on the action of gases, J. R. Bradford and Leonard Hill on anaesthetics, Professor Marshall on Quinine and on *Cannabis Indica*. Among other writers are Professor Walter Smith of Dublin, Stockman of Glasgow, Nestor Thaird, John Shoemaker, Sydney Martin, Thomas Oliver, Hector Mackenzie, W. Dixon, Hobart A. Hare, Theodore Cash, Archibald Garrod, and the late D. J. Leech of Owen's College. All these are names which imply a high level of excellence, and it will be found that the articles written by the various writers are well worthy of their reputation. Among the mass of subjects treated in this large volume it is impossible to enumerate all, but the following articles impressed us as being particularly good, those on alcohol and on anaesthetics, on the belladonna group, on quinine, on arsenic, the coal tar products, digestive ferments, organotherapy, serum-therapy, mineral waters, venesection, Weir-Mitchell treatment, climate, and electricity. Doubtless a more complete perusal of the volume would have added to the list, but the articles mentioned impressed us very favourably.

We may follow the editor in pointing out what the limits of the book are. It is not a book on *Materia Medica*, that excessively dry and, to us, uninteresting subject is only very sparingly touched upon. The volume is a therapeutic text book, and in each chapter a drug or group of drugs is dealt with under several headings. Take for example *nux vomica*. First we find a brief history of the use of the drug and a list of its preparations in the B.P. and U.S.P., then comes an account of its alkaloids, then pharmacology, which includes what used to be called the "physiological action" of the drug, its

effects on vertebrates, on the spinal cord, the medulla, cerebrum, heart, blood-vessels, muscles, peripheral nerves, and on metabolism, temperature, secretions, skin, gastro-intestinal tract. Then its action on invertebrates is discussed, and an account of drugs which "antagonise" it. Then comes an account of its toxicology, diagnosis and treatment. Then follows a discussion of its therapeutics and a very complete list of references to the literature of the drug is given. On the whole this text book must be regarded as one of the best in medical literature, and will long, we believe, remain a standard work of reference on therapeutics and pharmacology. Dr. Hale White, his collaborators and his publishers are all to be congratulated of the production of a volume in every way admirable.

Select Methods in Food Analysis.—By HENRY LEFFMANN, A.M., M.D., and WILLIAM BEAM, A.M., M.D. With 53 illustrations in the text, 4 full-page plates and many tables. London. REBMAN, LD., 1901. Price 11s 6d. Pp. 374.

THIS is an excellent sketch of the principal methods employed in Food Analysis. It is thoroughly practical and well up to date. It will prove not only of use to beginners but may well be consulted by professional analysts on many points with advantage. A handy volume of this kind, describing standard methods and their more recent modifications, as well as dealing with new classes of adulterants and their detection, cannot fail to be of real service. Such a book ought also to collate the more recent and most important monographs, reports and papers on the subject and so save from comparative oblivion much excellent work which is only available with great difficulty to analysts in general, few of whom have the opportunity of becoming acquainted with British, American and Continental official reports, analytical journals, and proceedings of analytical societies.

The volume before us has a good opening chapter on general methods employed in food analysis, and then goes on to deal very efficiently with the subjects of poisonous metals, preservatives and artificial colours. For example, there is given *in extenso* the list of permissible and of forbidden colours issued by the National Association of Confectioners of the United States of America, which is the fullest list with which we are acquainted. The French, German and Austrian Governments have published such lists, but they are so scanty and unsatisfactory as to be practically of little use. The American list's defect lies in the somewhat confused nomenclature employed, but we have recently had occasion to consult this list and to appreciate its suggestive value. We would suggest that in subsequent editions the authors might with advantage incorporate the regulations of other Governments or important associations which

would make the list of more cosmopolitan interest and value

The sections dealing with spirits and malt beverages is much too meagre to be of any service, and we think that these subjects ought to receive much fuller treatment in future editions. A *résumé* of the present position of Sophistication *versus* Detection on these points would be particularly important and interesting. At present the sophisticator has a decided advantage over the analyst as he can practically defy detection if he conducts the manufacture of factitious spirits with due regard to the imitation of genuine spirits in the matter of alcoholic strength, specific gravity, acidity, etc., and by employing flavouring essences which contain those substances and bye-products characteristic of the various varieties of spirits. There are many other subjects dealt with in this book on which material assistance would be rendered by the addition of a concise and up-to-date *résumé* of the nature we have indicated. The volume is well and tersely written, excellently "got up" as regards printing, binding and illustrations, and altogether a creditable and useful addition to works of its particular description and range.

Syphilis and other Venereal Diseases—By H. DEMERIC, M.R.C.S. (Eng.), Surgeon to the French Hospital, London, &c. London: Ballière, Tindall and Cox, 1901. Price 5s.

THE author states in the preface "My 'Notes on Venereal Diseases' published in 1889, form the nucleus of the present work." These notes enlarged, and combined with the author's "observations on venereal diseases, both in private practice and at the French Hospital in London," form the present work. From this description a correct idea of the essentially practical nature of the work may be gathered.

Of the fifteen chapters in the book, four are devoted to the consideration of soft sores, chancres and balanitis, six to syphilis, three to gonorrhoea, and the remaining two give the author's view on the prevention of venereal disease. His pages contain the thoughtful observations of a keen observer with clear views on the varieties and treatment of a class of diseases, with which every practitioner in this country should be thoroughly acquainted. It is written in an easy readable style. In discussing the differences between the hard syphilitic Hunterian chancre and the soft simple sore he states "it is less dangerous to mistake a syphilitic for a so-called 'soft' chancre than the reverse, for in the former case the error would not be discovered, and mercury not administered, till the appearance of the secondary symptoms, the delay not being absolutely hurtful. In the latter case mercury would be given at once, and the practitioner, 'whilst injuring his patient's constitution, would, in all probability, fall into the error of ascribing

ing the non-appearance of secondary symptoms to the treatment."

With this opinion we cordially agree, and seeing that the syphilitic patient should be under treatment for at least two years, would it not be better, in all cases in which there is the least doubt, to await the appearance of a secondary eruption before giving mercury?

On page 10 the author rightly says that simple sores, *i.e.*, soft chancre, may occur about the anus especially in women, from inoculation from existing sores on the genitals, but that a hard syphilitic chancre of the anus must be the result of bestiality, as it could not be produced by the discharge of another sore on the same person. Of course the author meant "sodomy" and not "bestiality" in this statement.

The opinion that "of the three venereal diseases,—simple sores, syphilis and gonorrhoea—I regard simple sores as certainly the least common" will not agree with that of most surgeons, who have had charge of out-patient departments, in our opinion.

The writer refers to the "bubon d'emblée," *i.e.*, a bubo said to develop from venereal poison absorbed during connection, passing through the lymphatics of the penis without forming a sore. Only the "poison" of soft chancre is apparently referred to. He thinks, and we agree with him, that it is difficult to admit this theory, and that such buboes are due to some undiscovered source of irritation, tuberculosis, or a tertiary gummatous tumour. He does not refer to syphilis d'emblée, *i.e.*, syphilis occurring without primary sore by direct infection of the blood of which such interesting cases have been recently recorded, that there can no longer be any doubt about its taking place.

Although limited in scope, we recommend this little work as a practical and safe guide to young practitioners. The perusal of it will lead to clear ideas being held about venereal disease, and will stimulate observation.

The Pocket Gray or Anatomists Vade-Mecum.—5th Edition. London: Ballière, Tindall and Cox, 1901. Price 3s. 6d. Fcap 8vo, pp. 269.

THIS the fifth edition of the well-known little book by Mr. E. Cotterell, F.R.C.S., has now made its reappearance, edited by Dr. C. H. Fagge, F.R.C.S., the Senior Demonstrator of Anatomy at the Medical School of Guy's Hospital. This edition differs but little from previous ones, only that the new editor has corrected actual mistakes, and amplified descriptions, but only where omissions were likely to lead students into error. Further, it will be found that there is added after each description of a muscle a sentence indicating the action of the muscle. The volume is, therefore, the same small compact little one it was twenty years ago, and in its present edition it will doubtless continue to enjoy the same popularity as it ever has had among

students, the publisher's aim having been to keep the book well within the dimensions of a pocket volume

Freyberger's Pocket Formulary—3rd Edition
Diseases of Children, 1901 Reiman, Ltd

It is scarcely more than a year ago since we reviewed the second edition of this elegant and useful little book, and now we have before us a third revised and enlarged edition, adapted to the latest edition of the B. P. We have already expressed a favourable opinion on the second edition, and the third edition is still more improved, a useful appendix of 18 pages being added on poisons and their treatment. The characteristic feature of the little book is the brief and clear way each drug is disposed of, short notes on the properties, use, therapeutics, dose, incompatibles, correction of taste and formulæ being given in each case. Thus take Ferric quinine citras—it is noted that alkalies and their carbonates are incompatible, and that the taste of gr 1 of iron and quinine is disguised by m 10 of syrup amantii. We can recommend the book—as were previous editions the present is elegantly got up, of pocket size, and bound in limp morocco

Current Literature.

SPECIAL SENSES

On the employment of agar-agar in the formation of a stump after enucleation or evisceration—Suker (*The Ophthalmic Record*, September, 1901) describes his experiments on animals with this substance. He injects a 20 per cent sterile solution of agar agar, which readily solidifies into the scleral cup left after evisceration, or into the emptied Tenon's capsule cavity after enucleation, by means of a syringe. Suppuration was common, especially when evisceration had been done. In any case the agar-agar was rapidly absorbed and replaced by an apparently equal quantity of connective tissue which underwent contraction. Suker's conclusions are that any stump obtained by the exclusive employment of absorbable material always yields only temporary results. The only way to obtain a permanent prominent stump is by Mule's method or one of the modifications of it.

The expansion of our medical nomenclature is illustrated by the following terms taken from a recent short article in an American journal on Heterophoria: phorometer, cyclophoria, imbralance, cataphoria, clinoscope, cyclo-phorometer, superduction, subduction, cycloduction, verting power, tropometer.

Tetany and Cataract—Peters (*Archiv d'Ophthalmol*, 1900), states that there is a connection between cataract and convulsions, and has gone into the subject exhaustively, and calls attention to the frequency of zonular cataract and rickets. He also gives statistics and thinks that these cataracts are more often due to tetany than to rickets. He reports four cases of tetany associated with this form of cataract. Forty per cent of all the cases of tetany that he has seen had also cataractous changes in the lens. As to how these changes come about he maintains a discreet silence. The association of cataract with epilepsy is also well known and has been referred to in these columns.

Sclerotomy with conjunctival infolding,—Major H. Herbert, M.S., read a paper with this title before the Bombay Natural and Physical Society on August 9th, 1901. It is based upon the fact that when iridectomy relieves glaucoma it is generally found, if the eye is examined, that the iris has become involved in the wound, leading to the formation of a fistulous cicatrix, and that the disease has been arrested by this and not by the opening up of the filtration angle. For some time Major Herbert tried purposely leaving the iris in the wound in doing the iridectomy, covering the prolapsed iris with a conjunctival flap. Latterly, however, he has made a small scleral incision with a long narrow conjunctival flap and no iridectomy. The conjunctival flap is then pushed well through the wound into the anterior chamber. The iris is kept well under the influence of eserine and the eyes are both bandaged for two days. The flap thus infolded allows the aqueous to drain away on either side of it. Successful cases were shown at the meeting. The operation seems likely to be a distinct advance in the treatment of glaucoma. It would be well, however, to adopt some other name for it, as it is hardly a sclerotomy in the ordinary (de Wicker's) meaning of the term. Etymologically, of course sclerotomy is correct for the operation, but that term has come to mean the method adopted first by de Wicker, which is quite different to Major Herbert's operation.

Amblyopia due to nitro-glycerine—Hogg (*Australasian Medical Gazette*, October 1901) records a case in a miner due to his inhaling the fumes of gelignite, a blasting powder of which nitro glycerine is the chief constituent. The patient had complete colour-blindness but no scotoma. He was a moderate smoker and had no history of venereal disease.

F. P. MAYNARD, F.R.C.S.

Correspondence.

THE WAR AGAINST MOSQUITOS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Many thanks for publishing my letter about Mosquito Brigades. My book on this subject is now nearly out. I enclose a list of our publications, and sent you some days ago my First Progress Sierra Leone Report. Now we send Annett and Dutton's Filaria Report, which you will see is a valuable work. Well, I do not think much has yet been done against malaria in India. Our sluggishness contrasts very unfavourably with the smart work of the Americans in Havana. It seems impossible to make people understand that even if anopheles larvae occur in undrainable tanks, that is no reason why we should not get rid of them out of small puddles. It is marvellous that people in the large Indian cities should continue to permit large swarms of mosquitos to breed all round them. You will bear witness that I have urged again and again campaigns against mosquitos *vide* for instance *Indian Medical Gazette*, July 1899. No one has taken my advice. The advice of young men who have had little practical experience of tropical sanitation has always been preferred. This is the old British habit. Never take the advice of those who know about a matter. Well, I have now proved the practicability of exterminating mosquitos in Sierra Leone. If this can be done there, it can be done anywhere. All the talk about the anopheles breeding in the Calcutta tanks amounts to very little. Even if tar can not be used the tanks should be flooded periodically with crude petroleum. Still better the tanks should be cleared of weeds and have their margins trimmed and deepened. Thus I fancy will largely reduce their anopheles. At the same time small puddles should be kept clear. An agitation should at once be commenced to make the Calcutta authorities start a mosquito brigade of at least 100 coolies, under the Health Officer, half to constitute a culex gang. You ought to at least clear out the culex in a few weeks. All statements to the effect that such is impossible have been disproved both in Sierra Leone and Havana and absolute nonsense. Please make use of any of these remarks you care to.

Please excuse dictated letter. Sir Charles King Harman, Governor of Sierra Leone, just informs me by letter that out of 400 public servants, only three are on the sick list—for non malarial diseases. The nursing home is empty. This can be published.

SCHOOL OF TROPICAL MEDICINE, }
LIVERPOOL.

13th November, 1901

Yours, etc.,
RONALD ROSS

(We publish this letter (though addressed to us privately), by permission, on account of its intrinsic interest.—Ed., I M G.)

MOSQUITOS AND MALARIA SOME OBJECTIONS TO THE THEORY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—It is some months ago since I endeavoured to show, through the medium of the *Madras Mail* by three letters, the weak points of the mosquito theory of malaria. In addressing you, I feel there will be more chance of receiving criticisms through the medium of your columns than has been the case with the above mentioned newspaper. I trust you will make allowances (and therefore will publish this letter of mine) in my touching upon the matter so closely connected with the work of the medical profession to which I do not belong.

At the onstart I beg to state that I have reopened this subject partly owing to the repeated hostile facts I have from time to time read against this theory, also, owing to the serious acceptance of the same theory by the public.

If the mosquitos "Anopheles" exist at a minimum when malaria exists at a maximum and *vice versa*, surely this is a strong contention that malaria is not caused by mosquitos, especially as there exists other means of contracting the disease.

It would be idle to pretend in our present state of knowledge that other means do not exist and that mosquitos are solely responsible for the same.

However much pretence there may be we see that the advocates of the theory in endeavouring to eradicate the disease by wholesale destruction of the anopheles resort to other means as well as those directly destructive to these insects.

To prove a theory without doubt in science, it is necessary to prevent in toto other outside influences affecting the experiment. Kill the mosquitos, but do not cleanse and ventilate those houses which were not cleaned or ventilated, neither alter the customs, food or water of those on whom you are experimenting.

When vaccination was enforced by law, other public health measures were passed concomitantly, and people were taught to suspect the cow, small pox decr used, but who could safely state that this was due to vaccination when other influences were allowed to act and now especially after vaccination has been in force in England so long, we still find from time to time epidemics.

The object of this letter is not to show that other means of contracting the disease exist, though this may be indirectly inferred, as I intend to show that the mosquito cannot convey malarial poison, the microbes or the disease, which over you will have to the body of the man.

Has it not occurred to the advocates of this theory to examine the anatomy of the proboscis of the insect, especially as it is through this organ that the disease is said to be conveyed into the man's system? If they have then it will be necessary for them to explain how this organ is capable of injecting. They certainly have not gone into the subject of how the proboscis is able to press any liquid up into the body of the mosquito (at least as far as I have read) and I feel that if they had recognized the proboscis as acting with capillary powers, they would at once have realized a difficulty in explaining the downward passage of the saliva previous to the elevation of the blood. To my mind there is no selection, and the liquid must be elevated the moment the proboscis finds its way to a liquid.

Even suppose the internal parts of the proboscis are filled with saliva and that the saliva is drawn out after the insertion by the flow of the blood in the capillaries, we come to this difficulty—that as the flow of the blood is constant, the drainage, and therefore downward flow would be likewise. What is to decide, when shall the blood be elevated? There is nothing left but to believe that at the moment of insertion, immediate elevation takes place, and whatever saliva exists in the internal parts of the proboscis is indeed carried with the flowing blood into the body of the mosquito.

In spite of the apparent physical impossibility for the mosquito to inject liquids into our body, it will still be contended that the fact that an immediate swelling takes place at the seat of puncture points out that a poison has been injected. But are we justified in assuming this when we

know that similar local swellings can be produced without the aid of poisons? The blow of a whip, the ligature of a vein can both produce swelling, the weal raised by the former curiously resembles the circular swelling of the mosquito-bite in regard to its defined and elevated edges. The prick of the finest pin if previously poisoned would never produce a swelling similar to the mosquitos. Neither do the hairs of a certain caterpillar which, having firmly imbedded themselves in our skin to a great depth, if carefully pulled out they produce very little swelling, but if left in, the swelling in no way resembles the mosquito bite.

It must appear remarkable that if these parasites are injected, that they are so quickly and so regularly produce a swelling, when we know from the advocates of this theory that other genera of culicids have none of the parasites in their saliva, and hence are incapable of reproducing malaria in mankind, and that the bite of every other genus of culicids will produce the identical swelling the genus anopholes produces.

If a few simple experiments will more clearly establish the fact that the mosquito bite's swelling is not due to a poison but is a physical effect.

Immediately any mosquito extracts its proboscis from our tissue after a nearly complete or incomplete fill, carefully note the seconds it takes before a swelling begins to show itself. If you do these experiments very carefully, you will find that the time varies very slightly for each bite, and the slight variation is apparently due to the tenderness or toughness of the particular tissue pierced. Let this period equal, say, 10 seconds. Presuming a poison has been injected, it must have been done before the filling has been commenced, for it is not likely the poison could remain in the proboscis after 100 seconds having passed with a strong current of blood flowing through the same. But no matter whether the mosquito has been filling for 50 or 100 seconds, it always takes 10 seconds after the abstraction of the proboscis for the swelling to become evident. It, therefore would have to be contended that the poison takes a variable time before it can produce a swelling. Let this even be granted as possible for argument's sake, in spite of its improbability the fact that a swelling never appears during the time that a mosquito is filling is direct conclusive proof that no poison is introduced.

There may be a host of facts which will tend to prove that the mosquito can directly convey malaria from one person to another, but of what avail is this if the injective powers of proboscis are absent? Direct proof is required to assure the introduction of the disease by the immediate inspection of the blood at the seat of puncture, inspection of the inserted proboscis through which no blood, and this latter experiment can be done by killing the mosquito at the point of time when the proboscis has been inserted.

Surely in the first instance the parasite or spore will be occasionally found in the blood, and in the second instance the saliva laden with parasites, would be evident in the proboscis. But I am inclined to believe negative results will be obtained, for after all it is asking a little too much to make believe that a liquid can be forced down a split and divergent tube in the twinkling of an eye and then the order reverses itself.

VFLAANAD,
TRIVANDRUM,
26th November, 1901

Yours, etc.,
LOUIS STROMEYER.

(A discussion of any of the points raised in the above letter is invited—Ed., I M G.)

Service Notes.

THE statement has been made that the late Surgeon General R. Harvey was the only D. G., I. M. S., who had died during his period of office. This statement is only in one sense true, as those who remember Lieutenant Colonel D. G. Crawford's article in our columns last year, know the title of Director General was only revived in 1895, when Surgeon General Oleghorn was appointed, consequently Surgeon General Harvey was only the second holder of the appointment.

Moreover, it is only since 12th November 1857, that there has been a definite head of the service. The first so appointed was John Forsyth (who by the bye was also called "Director General," a title which after that remained in abeyance till 1895).

The only other officer who might be said to have died while at the head of the service was Sir James Thompson, K. C. B., who was appointed to the Medical Board on 10th February 1819, and became, as senior member of the Medical Board, "Physician General" in 1853, and died on 25th August of the same year. Also Edmund Tritton, C. B., died at Simla

on 15th June 1856 while he was an Inspector General, being then second man in the service, just after Forsyth

THE Medical Board for many years ruled the service the members were three in number and were allowed to hold their appointments without any age rules, and retired when they liked

THE following members of the Board died while holding office—George Boyd, died 17th July 1808 at Calcutta, J G Henderson, appointed 1812, died at Calcutta on 20th September 1814, Adam Burt was appointed to the Board on 29th September 1814, and died the same year, 20th December 1814, Alexander Gibb was appointed in 1826, and died at Calcutta on 3rd June 1828, Charles Hunter was appointed in 1831, and died very soon after on 6th May 1831, John Brown was appointed in 1832, and died at Cuttack on 23rd July 1833, George Skipton was appointed a member in 1835, and died the same year on his way home on leave on 3rd October 1835

FOR nearly a quarter of a century no Administrative Medical Officer of the Bengal Medical Service died while holding that post—though between 1863 and 1869 no less than seven died, viz, R. W. Faithful, D I G, March 1863 died at Missouri on 19th September 1863, John MacIntyre D I G, 10th June 1863, died at Peshawar on 21st June 1867, R B Kinsey, D I G, 23rd March 1864, died at Calcutta on 1st April 1865, G S Mann, D I G, 31st March 1864, died at Dacca on 31st October 1864, H J Butler, D I G, 3rd October 1864, died on 2nd June 1865, John Naismyth, D I G, 23rd March 1865, died at Agra on 5th June 1868, and Wm Keates, D I G, 23rd December 1866, died at Calcutta on 19th April 1869. In the seventies H B Buckle, C B, was D I G, from 4th October 1870 till 12th December 1874, when he died in London and J O Bow, D I G, 16th March 1875, died at Edinburgh in September 1877. Bow was the last D I G who died while holding the post, and Macdonald the last who died in India

THE following I M S Medical Officers were in Surgeon General Harvey's batch at Netley—Kenneth McLeod, now at Netley retired 16th April 1892, J Cleghorn (D G) retired 25th October 1898 then comes R. Harvey, then R Reid retired 25th April 1897 B Knowles, died at Kohat on 29th June 1886 J Bennett retired 26th September 1890 A Skeen died of enteric at Kasauli on 10th June 1885, R B Thompson died at Dalhousie on 13th August 1869, J R Melver died at Sialkote on 11th December 1869 E B Gardner, killed at polo at Bareilly on 17th June 1886, J Kelly, retired on 12th March 1886, and L D Spencer who has been officiating as Director General during the past nine months

THE late Surgeon General Harvey first entered the A.M.S., as also did Surgeon General Cleghorn. In the same batch below them was Surgeon General Wm Taylor, C B, the present D G at the War Office. Surgeon General Harvey was second in the A.M.S. Examination and Cleghorn was below him. In the I M S Examination Cleghorn was second and Harvey third. J Bennett, who was seventh in the March batch of 1865, had also passed for the A.M.S. in previous examination. The explanation is that the I M S was closed from 1st October 1860 (Pilcher's batch) to 1st April 1865 (K McLeod's batch), and consequently when the I M S was reopened several men left the A.M.S. and got into the I M S. The closure for this period was due to an abortive attempt to amalgamate the I M S with the Army Medical Department.

By an oversight we omitted from our last issue the list of Honours conferred on medical men in India in the King's Birthday Gazette of 9th November 1901. They are as follows—

Lieutenant-Colonel G H G Gimlette, M D, I M S, now Residency Surgeon at Hyderabad, Deccan, and formerly of Indore. Those who remember the ability and pluck with which Lieutenant-Colonel Gimlette, many years ago, managed a serious revolution in Nepal which broke out at a time when he was left in political charge at Khatmandu, will be glad to believe that this episode has not been without influence in the granting to him of the Companionship of the Indian Empire

Hon. Major T H Hill, lately Senior Assistant-Surgeon, I S M D, and Assistant Secretary to the P M O H M's Forces, India, also receives the O I E. Major Hill has been known to generations of medical officers who have visited the P M O's office at Simla. He recently served upon the Hospital Stores Committee, and is usually credited with being the real author of I A R, Vol VI (Medical)

Lieutenant-Colonel F F Perry, F R C S, I M S, Officiating Principal, Lahore Medical College, is appointed an Honorary Surgeon to the Viceroy

The gold Kaiser i Hind Medal for public service was conferred on Major H E Deane, R A M C, the present Plague Medical Officer in Calcutta, on Major T E Dyson, M D, I M S, Deputy Sanitary Commissioner, Gujarat, who has had a hard and trying time of late in fighting disease and famine in Gujarat, Lieutenant-Colonel J McCloghry, I M S, F R C S, Civil Surgeon of Karachi, has also had much hard work during the repeated outbreaks of plague at Karachi, and Captain E Wilkinson, F R C S, I M S, who has been in charge of the plague operations in Jullundur District, also receive the gold medal

Among the recipients of the Kaiser i Hind Silver Medal we find the names of Captain J N Macleod, I M S, Civil Surgeon of Bikaner, Assistant-Surgeon J A Lobo, I S M D, and Miss J Yelbury, M D, of the Lady Lyall Hospital, Agra

The title of Rao Sahib has been also conferred upon K R G Pathak, State Surgeon, Dewas, and that of Rai Sahib on Babu Preonath Bose, late Assistant-Surgeon, Bengal, on Dwarkanath Dass, Civil Hospital Assistant, Bengal, and on Assistant-Surgeon Gurindatta Mal, Assistant Chemical Examiner, Punjab

THE services of Lieutenant Colonel G J Kellie, I M S, are replaced at disposal of Military Department on being relieved of his duties as Officiating Sanitary Commissioner, Hyderabad Assigned Districts

ASSISTANT SURGEON RAI BAHADUR UPFENDRA NATH SPN is appointed to be an Honorary Assistant Surgeon to the Viceroy

ON return from leave Captain J S S Lumsden, I M S, is appointed Civil Surgeon of Barhaich, N W P and Oudh

CAPTAIN J STEPHENSON, I M S, is appointed Civil Surgeon of Jhelum, vice Captain A H Moorhead, I M S, who is M O, 16th B Lancers

CAPTAIN C B PRALL, I M S, joins the Jail Department of the N W P and Oudh and Captain J M Woolley, I M S, that of the Punjab

CAPTAIN S H BURNETT, I M S, has been appointed Deputy Sanitary Commissioner, Sind Registration District

CAPTAIN T H SYMONS, I M S, acts as Resident Surgeon, Medical College Hospital, Madras, and Captain A Miller, M B, I M S, as District Medical Officer, Anantpur

The following new para is added to A R I, Vol XII—
“244 A The following arrangements are authorised for the provision of mess houses for officers of the Royal Army Medical Corps—

(a) Where a suitable Government building is available for the purposes of a mess house, it will be placed at the disposal of these officers rent-free

(b) Where a suitable Government building is not available, an allowance limited to the actual rent paid for accommodation used by the mess, and subject to the following maxima, will be granted by Government. This allowance will be payable by the Military Works Services to the officers concerned, who make their own arrangements for the hire of the building—

(i) For a mess of not less than ten medical officers, Rs 100 per mensem

(ii) For a mess of not less than eight medical officers, Rs 80 per mensem

(iii) For a mess of between five and seven medical officers, Rs 50 per mensem

LIEUT COL G HALL, F R C S, I M S, on being relieved of his officiating appointment as P M O, Lahore District, goes on furlough to complete the balance of furlough due, he having been recalled with some 40 other medical officers in September 1900 on account of the China Expedition

LIEUTENANT COLONEL O MONKS, I M S, Port Surgeon, Aden, has been allowed six weeks' extension of furlough on medical certificate

CAPTAIN R BRYSON, I M S, acts as Civil Surgeon, Cochin

THE following postings appear in a recent Gazette of India, they represent the return to civil employ of medical officers

withdrawn to the military department owing to the supposed needs of the China Expedition —

THE services of Captain V B. Bennett, M B, I M S (Bombay), are placed temporarily at the disposal of the Government of Bombay

THE services of Captain H J Walton, M B, F R C S, I M S (Bengal), are placed temporarily at the disposal of the Government of Bengal

THE services of Captain T A. O. Langston, I M S (Bengal), are placed temporarily at the disposal of the Government of the North Western Provinces and Oudh

THE services of the undermentioned officers are replaced at the disposal of the Government of Madras — Lieutenant-Colonel Hoimraji Morwanji Hakim, I M S (Madras), Captain Robert King Mitter, M B, I M S (Madras), Captain T H. Foulkes, I M S (Madras)

THE services of the undermentioned officers are replaced temporarily at the disposal of the Government of Madras — Captain T E Watson, M B, I M S (Madras), Captain C G Webster, I M S (Madras), Captain W Lethbridge, M B, I M S

THE services of Captain A F W King, I M S (Bombay), are replaced temporarily at the disposal of the Government of Bombay

THE services of the undermentioned officers are replaced at the disposal of the Government of Bengal — Major Upendra Nath Mukerji, M B, I M S (Bengal), Major Naendra Prasanna Sinha I M S (Bengal), Captain L A R Newman, M B, I M S (Bengal), Captain W D Hayward, M B, I M S (Bengal)

THE services of the undermentioned officers are replaced temporarily at the disposal of the Government of Bengal — Captain D R Green, M B, I M S (Bengal), Captain D R Chatterton, M B, F R C S, I M S (Bengal), Captain A F Stevens, I M S (Bengal), Captain T B Kelly, F R C S, I M S

THE services of Captain O Thomson M B, I M S (Bengal), are replaced at the disposal of the Government of the North Western Provinces and Oudh

THE services of the undermentioned officers are replaced temporarily at the disposal of the Government of the North Western Provinces and Oudh — Major G B French, M B, I M S (Bengal), Captain H A Smith M B, I M S (Bengal), Captain C Milne, I M S (Bengal), Captain W Selby, D S O, I M S, (Bengal)

THE services of the undermentioned officers are replaced temporarily at the disposal of the Government of the Punjab — Captain E S Peck M B, I M S (Bengal), Captain J Stephenson, M B, I M S (Bengal), Captain H Ainsworth, M B, I M S (Bengal)

THE services of Captain F A L Hammond, I M S (Madras), are replaced temporarily at the disposal of the Government of Burma

LIEUTENANT P L O'NEIL, I M S, is appointed to do duty with the 3rd Madras Lancers, Secunderabad. Lieutenant O'Neill is one of the last batch who passed out of Netley on 27th June 1901

CAPTAIN V B BENNETT, M B, I M S, is appointed Civil Surgeon of Bhoach

THE services of the undermentioned officers are placed temporarily at the disposal of the Government of Burma — Captain A Fenton, M B, I M S, Lieutenant G P T Gronbe, I M S

THE services of the undermentioned officers are placed temporarily at the disposal of Hon'ble the Chief Commissioner of the Central Provinces — Captain W H Kenrick, I M S, Captain Padmahar Krishna Chitale, I M S, Lieutenant A. M Fleming, M B, I M S

THE services of the undermentioned officers are placed temporarily at the disposal of the Government of Madras —

CAPTAIN T H SIMONS, I M S. (Madras), Captain A. Miller, M B, I M S (Madras), Captain R Bryson, I M S.

THE services of the undermentioned officers are placed temporarily at the disposal of the Government of Bombay —

CAPTAIN J B JAMESON, M B, I M S (Bombay), Lieutenant L T R. Hutchinson, M B, I M S

THE services of the undermentioned officers are placed temporarily at the disposal of the Government of Bengal —

CAPTAIN F H WATLING, M B, I M S (Bengal), Captain W W CLEMESHA, M B, I M S (Bengal), Captain J G P Murray, M B, I M S

HONORARY CAPTAIN J KELLY retires from the service, he has been for many years Civil Surgeon of Dumkha, Sonthal Pergunna and is succeeded there by Military Assistant-Surgeon R. Brown, from the Darjeeling Sanitarium

ON the retirement of Lieutenant Colonel E Bovill, F R C S, I M S, Captain F O'Kinealy is temporarily appointed Civil Surgeon of Howrah

CAPTAIN H M EARLE I M S is granted furlough for one year, and Lieutenant E L Ward, I M S., leave for 3 months

LIEUTENANT COLONEL J W RODGERS is granted leave for one year on private affairs

MAJOR C T HUDSON, I M S, has been appointed Civil Surgeon of Satara.

CAPTAIN J B JAMESON, M B, I M S, has become Agency Surgeon of Rajkot

CAPTAIN N R. J. RAINFORD, I M S, is appointed to officiate as Civil Surgeon of Chanda C P

CAPTAIN C B PRALL, I M S, is appointed to officiate as Superintendent, Central Prison, Lucknow

THE following appointments appear in recent Bengal Command Orders —

5th Bengal Cavalry — Captain H B Meakin, Indian Medical Service, to the officiating medical charge of the Regiment

7th Bengal Lancers — Captain T H Delany, Indian Medical Service, to the officiating medical charge of the Regiment

14th Bengal Lancers — Captain J Gould, Indian Medical Service, to the officiating medical charge of the Regiment.

4th Rajputs — Captain T Hunter, Indian Medical Service, to the officiating medical charge of the Regiment.

5th Bengal Infantry — Lieutenant A C MacGilchrist, Indian Medical Service, to the officiating medical charge of the Regiment

8th Rajputs — Lieutenant-Colonel S C Nandi, Indian Medical Service, to the officiating medical charge of the Regiment.

9th Gurkha Rifles — Major F Wyville Thomson, Indian Medical Service, 2nd Battalion, 2nd Gurkha Rifles, to the officiating medical charge of the Regiment

11th Rajputs — Lieutenant H Innes, Indian Medical Service, to the officiating medical charge of the Regiment.

16th Rajputs — Captain J W F Rait, Indian Medical Service, to the officiating medical charge of the Regiment

2nd Battalion, 2nd Gurkha Rifles — Captain R P Wilson, Indian Medical Service 49th Gadhwal Rifles, to the officiating medical charge of the Regiment.

LIEUTENANT COLONEL W A CORKERY, I M S., has taken over the civil surgeoncy of Ahmednagar, relieving Dr E Maynard

WE extract the following paragraphs from an interesting paper by Captain H. A. L. Hollwell, R.A.M.C., in the Transac

tions of the *Bombay Medical and Physical Society* (October 1901) —

"When the 19th century dawned, the care of the sick and wounded of our armies, at home and abroad, was entrusted to three distinct medical departments. These were the Army Medical Department, which had charge of all British soldiers except those who belonged to the Royal Artillery, the Ordnance Medical Department, which had charge of the Royal Artillery, and the East India Company's Medical Service to which was entrusted the care of the Indian Army with the exception of the few British regiments then in India, whose surgeons belonged to the British service.

John Hunter was, until his death in 1793, the head of the Army Medical Department. He was succeeded in its administration by a Medical Board consisting of a Surgeon General, a Physician General, and an Inspector General of Hospitals. Each of these had distinct duties to perform. The Board did not work well and was, as a result of the outcry over the Walchoren fiasco, abolished in 1809. Its duties were then taken up by a Director General, assisted by two Inspector Generals. About 1817 one of the latter disappeared, and the present arrangement came into existence.

In 1801 the Regimental System was in existence. Each regiment had its surgeon and surgeon's mate, and in time of peace had its own small regimental hospital. In war time, however, we find that regimental hospitals were not recognised—all sick and wounded, except the most trivial cases, being sent to large general hospitals, in the rear. These general hospitals were under the Army Medical Staff (as then distinguished from the Regimental Surgeons), the members of which were ranked as Inspectors, Physicians, Surgeons, and Apothecaries to the hospitals, and, in the junior ranks as hospital mates. The medical arrangements of each brigade and division were also under the superintendence of Staff Surgeons. When a regiment advanced into battle, it was accompanied by one of its surgeons, and he carried out first aid to the wounded. It would appear also that some of the officers and men took with them held tourniquets in the use of which they had been previously instructed. In the rear of each brigade there were 'collecting stations'—at that time more commonly and significantly called "amputating stations"—where the second surgeon or mate of each regiment awaited the arrival of the wounded. It was at this spot often within reach of the enemy's shot, that the greater part of the operative surgery of war was carried out. This is in great contrast to our present custom. Nowadays almost all our operations are performed at the base hospitals or in the stationary hospitals miles away from the fighting, and often days and weeks after the receipt of the wound necessitating operation.

At Fuentes d'Onore in the Peninsular War the amputating station was so far forward that a brigade of cavalry was posted there to defend it."

The following remarks by Captain Hollwell are also worth quoting —

"It was recently stated, in a paper read before the British Medical Association, that this subject was founded and first taught by the late Professor Parkes, who was in 1842 Assistant-Surgeon to the 6th Regiment. Parkes himself would not have agreed to such a statement, for his classical work on Army Hygiene contains numerous references to the work of his predecessors in the same field such as Sir John Pringle, Brocklesby, and Monro, all of whom were Army Physicians and admirable writers on Military Hygiene during the latter half of the 18th century, to say nothing of such writers as William Hunter, Robert Jackson, John Hennen, Sir George Ballgall, and Sir James McGrigor, all Army Surgeons whose works on the organisation of Military Hospitals, the prevention of disease in the Army, and the sanitation of barracks, and camps, at home and abroad which appeared at the beginning of the 19th century, may be read with pleasure and profit even at the present day. It is to the efforts of these that the soldier owes his barracks, his bed—the soldier did not get a bed to himself until about eighty years ago,—the proper ventilation of his hospitals and barracks, separate quarters for married soldiers, his canteen, his ablution rooms, a proper diet when in hospital—the sick got no special dietary during the 18th century,—the arrangement of "trooping" so that the soldier should arrive at unhealthy foreign stations in the healthy season, and also the invaliding of those who required change of air for the completion of their cure after attacks of debilitating disease."

On the departure of Lieutenant Colonel W. K. Hatch, M.B., F.R.S., I.M.S., on furlough, Lieutenant Colonel H. P. Dimmock, M.D. (Durh.), I.M.S., acts as Principal of Grant Medical College retaining his Professorship of Midwifery. Major W. H. Quicke, F.R.S., I.M.S., acts as Professor of Surgery in the College and senior Surgeon in the J. J. Hospital. Cap-

tain Ashton Street, F.R.S., M.B., I.M.S., acts as Professor of Anatomy and Second Surgeon. Capt. J. B. Jamieson, I.M.S., acts as Medical Officer, Kathiawar Political Agency.

We understand that the Government of India asked for 52 new men to be taken into the I.M.S., but the Secretary of State only sanctioned 26, four of these were at once obtained in London from the candidates at the last examination. The Secretary of State also suggested that commissions might be offered to the medical men temporarily employed for plague duty these officers to rank after the last batch of candidates arrived in India, so far we understand very few of the plague medical officers have accepted the offer, in many instances they are too old to ever reach their full pensions.

The section on health of Jails in the Sanitary Commission's Annual Report is this year issued separately and thus takes the place of the annual note by the Director General on Jails.

The *Scientific Memoirs of Medical Officers of the Army of India* will this year appear in a new guise, viz., each article or group of articles separately. At present the first six articles of the new series are in the press and will be issued soon. One of these will be a very good pamphlet by Captain S. P. James, I.M.S., now on the Malaria Commission, on Mosquitoes and Malaria, and methods of Prophylaxis. It is admirably illustrated and intended for the use and instruction of Assistant-Surgeons and Hospital Assistants.

The constitution of the Advisory Board for the supervision of the Royal Army Medical Corps has been made known. In some respects the appointments are as good as could be desired. The appointment of Lieutenant Colonel D. Bruce, F.R.S., as the expert in tropical disease is excellent, as is that of Major W. G. Macpherson as sanitary expert, though in this place we expected to find the name of Lieutenant Colonel A. M. Davies, F.R.S., recently the sanitary expert at Army Headquarters, India. As regards the civilian members the names of C. B. Ball and Sir F. Treves and Mr. H. D. Tripp, representatives of surgery, are unexceptional. Dr. James Galloway is best known as a specialist in Dermatology. The non-appointment of a sanitary expert among the civilian members is a grave mistake for it is broad question of sanitation and hygiene that this Board will be called upon to advise, and none of the civilian members have any pretensions to any special knowledge of hygiene. We note that the representative of the India Office is not yet selected.

MAJOR H. DRAKE-BROCKMAN, I.M.S., F.R.C.S., has presented to the Museum of the Royal College of Surgeons, a complete set of the instrument used by "couchers" and such like cataract operators in India.

LIEUTENANT COLONEL A. SILCOCK, I.M.S., Civil Surgeon, Bilaspur, O.P., who was on furlough on medical certificate since 5th February 1901 has been granted 4 months' extension of leave up to June 1902.

LIEUTENANT A. M. FLEMING, I.M.S., acts as Civil Surgeon of Ohluadwara, and in executive and medical charge of the district jail.

The Annual Report of the Sanitary Commissioner will be later this year than last year, and will probably not appear before February.

LIEUTENANT COLONEL L. A. WADDELL, I.M.S., LL.D., C.I.E., is busy at work on the new edition of that valuable and much needed book, *Lyon's Medical Jurisprudence for India* (Thacker, Spink & Co). It may be expected in a few months.

A NEW hospital has been opened at Indore, a place of interest in medical history as the hospital where Beaumont, Keegan and Caldecott began litholapaxy in children.

CAPTAIN F. D. BROWNE, I.M.S., M.B., is appointed Officiating Medical Officer 17th Madras Infantry, Lieutenant W. H. Tucker, I.M.S., to 26th Madras Infantry, Lieutenant R. B. Foster, I.M.S., to the 29th Burma Infantry, and Lieutenant L. Gilbert, I.M.S., to wing of 12th Burma Infantry at King Tung.

LIEUTENANT COLONEL J. LEWIS, M.D., is granted furlough for one year and Major A. Leahy, F.R.C.S., L.M.S., whose time as Civil Surgeon of Darjeeling has expired, is appointed as Officiating Professor of Ophthalmology, Medical College, Calcutta.

LIEUTENANT COLONEL J. YOUNG, I.M.S., who has been acting P.M.O., Presidency District, reverted to his previous appointment at Roorkee on the return from furlough of Lieutenant-Colonel J. B. Bookley, C.B., I.M.S., who was in invalided home after his return from China.

LIEUTENANT COLONEL S. C. NANDI, I.M.S., is appointed to have charge of No. 44 Native Field Hospital, mobilised for the reserve brigade at the Waziristan blockade. Lieutenant Steen, I.M.S., also joins the Field Hospital.

THE following notice appeared in *Gazette of India*, 7th December 1901—

His Excellency the Governor General in Council has received with much regret intelligence of the death at Simla, on the 1st instant, of Surgeon General Robert Harvey, M.D., C.B., D.S.O., F.R.C.P., I.M.S. (Bengal), the Director General of the Indian Medical Service and Sanitary Commissioner with the Government of India.

Surgeon General Harvey had only just returned from furlough to resume the duties of the Director Generalship, a post to which he was first appointed in February 1893, after an honourable service extending over more than thirty years. By his death, towards the close of a long and distinguished career, the Government of India lose a valued public servant and a trusted adviser.

CAPTAIN C. R. PEARCE, I.M.S., is ordered to proceed to Tientsin, China, relieving Captain W. H. Kenwick, I.M.S.

LIEUTENANT F. F. ELWES, I.M.S., assumes medical charge of 10th Gorkha Rifles.

CAPTAIN WATLING, I.M.S., has joined the Bengal Jail Department, and is posted to Midnapore Central Jail. Captain R. H. Maddox also joins the Jail Department, and will be posted as Superintendent of the Presidency Jail, Calcutta.

SECTION D, No. 52, NATIVE FIELD HOSPITAL Secunderabad, Section D, No. 63, Native Field Hospital, Bombay, No. 3 Field Medical Store Depot, Calcutta, and a native General Hospital of 200 beds were mobilised for the Mahsud force.

LIEUTENANT COLONEL J. K. KANRA, I.M.S., is permitted to retire from the service from 14th December 1901. He entered the service in April 1891, and recently has been Medical Officer, 3rd Madras Lancers.

CAPTAIN S. A. C. DATTAS, I.M.S., Civil Surgeon, Chanda, C.P., has been granted a further extension of furlough for six months in addition to furlough fourteen months already granted to him on medical certificate.

CAPTAIN W. W. CLAPHAM, I.M.S., is appointed to act as Deputy Sanitary Commissioner, Northern Bengal Circle, vice Captain A. Gwyther, I.M.S.

Nos. 43 and 44 Native Field Hospitals left Lucknow on 14th December for the Waziristan border with the following officers—No. 43 in charge, Major Wyville Thomson, and Captain Bruce Seton, Lieutenants Graham and Lapsley, I.M.S. No. 44, in charge, Lieutenant Colonel Nandi, and Lieutenants Weinman, Steen and Sprawson, I.M.S.

DR W. FORSYTH, Health Officer, Port of Calcutta, has returned to Calcutta.

LIEUTENANT G. FOWLER, I.M.S., is appointed to act as Civil Surgeon, Buxa Duars in addition to his regimental duties.

CAPTAIN J. H. HUGO, I.M.S., D.S.O., is appointed to act as Civil Surgeon of Nadia.

THERAPEUTIC PREPARATIONS, &c.

WE direct attention to the Ophthalmic Tabloids brought out by Messrs Burroughs, Wellcome & Co. The tabloid is so manufactured as to ensure its rapid and complete solubility in the lachrymal secretion. Each tabloid contains 1.250 gr of alum, and is issued in tubes containing 25 tabloids. The same firm send us specimens of their tabloid Morphine and Emetine, which should prove of service in cases where a sedative and expectorant combination is required in cases of cough. By the use of the tabloids purity and accuracy of dosage are secured.

Medical men need hardly be reminded of the value and excellence of Van Houten's Cocoa. It has gained and long kept its reputation as a very pure and wholesome cocoa, and can be highly recommended to convalescents and others in poor health with weak digestions.

MESSRS BALL, HOBSON & Co. of Umballa, inform us that they stock large supplies of all bacteriological requisites staining reagents, apparatus, &c., all of which have been selected and approved of by Major Semple, R.A.M.C., of the Pasteur Institute, Kassaui.

We direct attention to the Urotropin, sold by Messrs Zuumerman & Co., St. Mary-at-Hill, London, E.C.

Notice

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co. Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs Thacker, Spink & Co., Calcutta.

Annual Subscriptions to the *Indian Medical Gazette* Rs. 12 including postage.

BOOKS, REPORTS, &c., RECEIVED

Practice of Medicine 4th Ed. Osler (Young J. Pentland)
Year Book of Scientific Societies (O. Griffin & Co., Ltd.)
Davis Obstetric Nursing (W. B. Saunders & Co.)
American Year Book of Medicine &c (W. B. Saunders & Co.)
Nichols's Practice of Medicine (W. B. Saunders & Co.)
Atlas of Obstetrics (W. B. Saunders & Co.)
Atlas of Labor (W. B. Saunders & Co.)
Atlas of Nervous System (W. B. Saunders & Co.)
Atlas of Ophthalmology (W. B. Saunders & Co.)
N. Senn's Surgery (W. B. Saunders & Co.)
American Illustrated Medical Dictionary (W. B. Saunders & Co.)
Ander's Practice of Medicine (W. B. Saunders & Co.)
Veck's Sexual Impotence (W. B. Saunders & Co.)
Raymond's Physiology New Ed. (W. B. Saunders & Co.)
Hirst's Obstetrics (W. B. Saunders & Co.)
Penrose's Diseases of Women (W. B. Saunders & Co.)
Bergey's Hygiene (W. B. Saunders & Co.)
Lockwood's Practice of Medicine (W. B. Saunders & Co.)
Atlas of Bacteriology (W. B. Saunders & Co.)
Durck's Pathological Histology (W. B. Saunders & Co.)

COMMUNICATIONS RECEIVED FROM —

Major C. H. Bedford, I.M.S., Calcutta. Major R. Bird, I.M.S. Major A. Buchanan, I.M.S., Nagpur. Lieutenant Colonel R. N. Campbell, Dacca. Dr. K. O. Bose, C.I.L., Calcutta. Lieutenant Willmore, I.M.S., holdma. Lieut Col F. W. Wright, I.M.S. D.S.O. Waziristan. Capt Henry Smith, I.M.S., Jullundur. Capt W. D. Sutherland, I.M.S., Sangor. Mhy Asst. Surgn. Daly Alipore. Capt Harrison, I.M.S., Simla. Lieut Col R. Ross, I.M.S. Liverpool. Major E. Roberts, I.M.S. Simla. Lieut Col Dennis, I.M.S., Peshawar. Major Maynard, I.M.S., Patna. Dr. Chas. Buxby, Lieut Col. Pilcher, U.S.A., Detroit. Messrs W. B. Saunders & Co., Philadelphia. Dr. P. Manson London. Capt. W. Selby, I.M.S., Sitapur. Dr. Sinclair, Mysore. Dr. Shikore Poonia. Dr. Sinuathaby Colombo. Dr. Bentley, Tezpur. Lieut H. M. Mackenzie, I.M.S., Ivanga Valley. Messrs King Hamilton & Co., Calcutta. Lieut. Stokes, I.M.S., Abbottabad.

Original Articles

PRE-SERVICE SURGEONS

By D G CRAWFORD, M B,

LIEUT COL., I M S,

Civil Surgeon, Hughli

(Continued from p 6)

Notes on the Medical Officers serving the Company prior to the formation of the medical services

Richard Harvey arrived in Calcutta on 20th January 1712 as Surgeon to the *Recovery*, and was appointed Surgeon to the Settlement in February 1713, in succession to William James, gone to England. For two years afterwards, 1717—1719, Dr Harvey "officiated in the Church service" in the absence of a *predic*. One wonders if William Warren ever officiated in this way for the Revd Mr Adams.

Benjamin Greene, Doctor's mate, died in Calcutta on 30th May 1712.

Thomas Stacey was in Calcutta in 1713. In the Consultations of 6th August 1713 appears the report of an autopsy made by William Hamilton and Richard Harvey, on the body of William Hall, who was killed by Jean Sun, a Frenchman. Sun was acquitted as having acted in self-defence, Hall being the aggressor, along with two companions, Ensign John Brown, and Thomas Stacey, Doctor's mate.

Oliver Coult first came to Calcutta on 9th March 1708, as Surgeon of the *Hallifax*. He appears in the list of Company's servants in the Bay, on 8th January 1714 (1715), where the following Surgeons are mentioned —

Richard Harvey, arrived in India, 1st January 1712	Pay £36
Oliver Coult, arrived in India, 7th September 1713	" £36
William Hamilton, arrived in India, 27th December 1711	" £36
" gone with ye present "	

Even in the beginning of the seventeenth century there appear to have been private practitioners in Calcutta. In the Consultations for 3rd November 1709 appears the following entry: "Mr Blount brought in a Doctor's bill paid by Mr Waldo for attendance and physic to her husband in his sickness, our Doctor being sick at that time. Ordered that the Buxie pay the same" (Wilson I, 323). Buxie means Bakshi, i.e., Paymaster. On 3rd March 1713 payment was made to a French Doctor of a bill for Rs 34 for attendance on Mr Edmund Mason, when both the Company's Doctors were "up the country." On 18th January 1717 a bill of Rs 45-12, "which is not unreasonable," was paid to the Dutch Doctor at Chinsura for attendance on Mr Thomas Cooke, who was taken ill when on duty at Hughli.

For the next thirty years all the information I have about Surgeons in Bengal, with the exception of Holwell and Gray, consists in the list of domestic occurrences from St Anne's Parish Register as follows —

Frazier, Thomas, Surgeon, died 21st October 1719

Corbet, Benjamin, Surgeon died at Cossimbazar, coming from Patna in 1724

Goodwin, Dr, Richard Quelch, Dr Goodwin's servant, died 30th December 1725

Sturt, John, Doctor, died 1st December 1726 (Is this the same John Sturt who witnessed Hamilton's will?)

Beal, William, Surgeon, died 28th August 1727

Davis, Joseph, Surgeon, died 18th September 1727

West, Robert, Surgeon, died 20th July 1729

Dipping, Anthony, Surgeon, married Margaret Morphey, 2nd January 1734, and died six months later, on 22nd July 1734

Lindsay, W, Surgeon, died of fever, 29th March 1742 (This name is not in St Anne's Register, though another Surgeon of the same name died in Calcutta seven years later.)

Napier, Alexander, Doctor, died 25th November 1742

Hook, Joseph, Surgeon, died 17th May 1748

Cauty, John, Surgeon, died 17th June 1748

Mackdonald, John, Surgeon, married Mary Askins, a country woman, 14th November 1749

Linsey, William, Doctor and Inhabitant, died 27th July 1749

Irwine, Christopher, Surgeon and Inhabitant, died 13th February 1751

Hemming, John, Surgeon, died 13th October 1753

John Zephaniah Holwell¹ came out to India as Surgeon to an Indiaman in 1732. If William Hamilton is the most famous, Holwell was assuredly the most successful of all the medical officers who ever served the Company. He was the son of a London merchant, and grandson of John Holwell, a noted mathematician, and Royal Astronomer. He was born in Dublin on 17th September 1711, and received his medical education as an articled pupil of Andrew Cooper, Senior Surgeon to Guy's Hospital. After his arrival in India, he went as Surgeon on Company's ships to Jedda and Mocha, and studied Arabic. He twice went in medical charge of the "Patna party," a body of about 400 soldiers, which went annually from Calcutta to Patna, afterwards served as Surgeon to the Dakka Factory, and was posted to Calcutta in 1736. He was chosen as Alderman to the Mayor's Court in 1736, and in 1740 was appointed Surgeon to the Hospital, but did not come on the regular list of Company's servants till 1742. A Council letter of 13th January 1749 reports —

¹ Much of this account of Holwell is taken from Busted's "Echoes of Old Calcutta."

"In obedience to your commands of March 1742, we appointed Mr John Zephaniah Holwell, one of your surgeons in this establishment, in the room of Mr William Landsay, who departed this life of a fever on the 29th of that month" (Long's Selections, No 24, p 51) It seems strange that an appointment should be reported seven years after it was made, and makes one suspect that there may be some confusion about the date of William Landsay's death Holwell became Principal Surgeon to the Presidency, and was twice elected Mayo. He went home in 1748 When in England he submitted to the Court of Directors a plan for the reformation of the Collector's Cutchery in Calcutta, as a result of which that appointment was given to him, and in 1752 he came out again as twelfth in Council and "*Zamindar*" of Calcutta, an office roughly corresponding to those now held by the Commissioner of Police and Collector of Calcutta, and held that office up to the capture of Calcutta in 1756

Holwell appears to have been a man of the most tremendous energy The consultations of Fort William from 1752 to 1757, the years when he held the office of *Zamindar*, teem with notices of his reforming zeal In 1752 he dismissed Govindram Mettie (Mittre), the "black *Zamindar*," his principal assistant, for heavy frauds The majority of the Council reinstated Govindram, but made him refund Rs 3,397, which he had embezzled In the same year, 1752, Holwell took a census of Calcutta, which made the population 400,000, probably an immense over-estimate On 29th December 1752, we find him reporting in the state of the accounts On 30th April 1753, he complains of Mr John Wood for rescuing one Mohun Persaud from his custody, as a result of which Mr John Wood was deported to England On 24th May 1753, he is reporting on an embargo laid by the Nawab at Kasim Bazar on the rice ships bound for Calcutta, and on the 10th June suggests alterations in the mode of conducting investments On 25th July he proposes to measure the Company's ground, and on 26th July suggests the levy of a duty of five per cent on the sale of houses belonging to Europeans, and the increase of taxation generally On 8th December 1754, he rents Similia (Simla in Calcutta) for the Company, for Rs 2,281 yearly He had some idea of sanitary improvement, probably rare enough at that time in Calcutta, for on May 12th, 1755, he requested permission to repair and enclose the great tank and prohibit the washing of people and horses therein This was the large tank now in the centre of Dalhousie Square, then, and for more than a century afterwards, it afforded the best drinking water available in Calcutta On 4th September 1755 he asks for leave to England, quoting a despatch from the Directors at home "directing their servants to

give one year's notice of their intention to quit India" He had much to go through before he was able to take this leave, a year and a half later! By this time he had risen to be seventh in Council

In June 1756, Surajaldaulat, the Nawab of Bengal, captured Calcutta, the surrender being followed by the ghastly tragedy of the Black Hole I do not propose to repeat here this story, which is, or should be, well known to all, but merely to recount Holwell's share in the siege After Drake, the Governor, had deserted the garrison,—surely an episode without parallel in English history,—Holwell by universal consent took over the conduct of the defence In his evidence before the Parliamentary Committee which subsequently enquired into the matter, John Cooke of the Civil Service, one of the survivors of the Black Hole, says — "As soon as it was known the Governor had left the Factory, the gate towards the river was immediately locked to prevent any further desertion, and the general voice of the garrison called for Mr Holwell to take the charge of their defence upon him A council being hastily summoned, Mr Pearkes, the senior then on shore, waived his right to the Government in favour of Mr Holwell, who thereupon acted in all respects as Commander-in-Chief, and exerted his utmost to encourage every one" An account of the Black Hole, quoted by Busted from Ome, written by a junior civilian, contains the following quaint note upon Drake's desertion — "Upon the Governor going off several muskets were fired at him, but none were lucky enough to take place" Most people will sympathize with the writer's regret at this bad marksmanship

Holwell tells us that Leech, the Company's smith, escaped when the Mogul's troops entered the Fort At dark he returned, and told Holwell that he had got a bout, and could get him away Unlike Drake, Holwell refused to desert the men under him, or rather the rest of the prisoners, as by this time they had surrendered Leech thereupon said that he would stay too, and paid for his devotion with his life, being one of those who died in the Black Hole Holwell subsequently describes the defence of Calcutta as "a tragedy of errors"

At least five other medical men, Fullerton, Gray, Knox, Taylor, and Ingles, were in Calcutta during the siege None, except Holwell, were in the Black Hole Ingles was killed during the siege The other four were all taken prisoners, but subsequently escaped, and joined the other refugees at Fulta

When the prisoners were confined in the Black Hole, Holwell seems to have been the only man who even for a time kept his head, offering bribes to the guards to release them, but without success He was one of the 23 survivors, and, being known to have been the leading

spirit in the defence, a member of Council, and the highest in rank among the survivors, he was taken by the Nawab in chains to Murshidabad. He was released towards the end of the year, made his way to Fulta, and at last got his long delayed leave, going home in the *Sycen*, a sloop of 80 tons, early in 1757, and writing his narrative on the way. While at home he was nominated to succeed Clive as Governor of Bengal, but waived his claim in favour of Mr. Massingham, and was appointed second in Council. Before he started, a new Board of Directors was elected, who cancelled these arrangements, and sent him out as seventh in Council. By the time he landed he had risen to fourth, by the departure of seniors, in 1759 he was second, succeeded Clive as Governor on 28th January 1760, but resigned the same year, on 27th July 1760, and returned to England for good.

A letter from the Court, at home, dated 25th March 1757, despatched before the capture of Calcutta was known in England, mentions a minute by Holwell about establishing a Residency at Agia, consideration of which is postponed, and praises his administration as *Zamindar*. The Court were of opinion that the revenues in Bengal had been greatly increased under the management of Mr. Holwell, without imposing any new duties, or oppressing the poor, and that he had acted with integrity and lenity in the judicial work of his office. They add Rs 4,000 a year to his salary, in addition to his former salary of Rs 2,000, in lieu of all fees and perquisites, and direct that he shall not rise to a higher station in Council without further orders.

That Holwell was a man fit for command was recognised by Clive, who, when Calcutta was altogether denuded of troops during the war with the Dutch in 1759, appointed him Colonel of the militia, consisting mainly of the European inhabitants, for the defence of the Fort and settlement. As it turned out, the militia were not actually called on to fight on this occasion, but, had Forde been defeated at Biderra, the English in Calcutta would, within a few days, have again been fighting for their lives.

After his return to India, in 1759-60, we again see numerous signs of Holwell's official activity in the consultations. On 13th February 1759, with Mr. Mapletost, he asks, on behalf of the Provincial Grand Lodge of Masons, for payment of a bond for Rs 2,475, which had been lost at the capture of Calcutta. In 1758 the Council resolved "that no European be suffered to purchase any of the Hon'ble Company's farms" (in the 24-Paiganas). In spite of this we find Holwell purchasing two such farms, Medunmull and Ekaberipoor, when they were put up for sale by auction at the Town Hall, Calcutta, on 31st July 1759. He paid a fair price for them, Rs 72,000, the upset price being Rs 57,000. On 4th June 1759, a native syndicate had offered

to farm the whole 24-Paiganas at an advance of Rs 1,10,001, on the rent of the previous year. Holwell advised the refusal of this offer, saying that he would willingly give Rs 10,000 more himself, and that the farms were worth much more. His advice was justified by events, the total realized by the auction—at which he himself, as noted above, purchased the leases of two farms, being Rs 7,65,700, an advance of more than two lakhs over the previous year's revenues, Rs 5,46,044. During this period Holwell erected, at his own expense, a monument to the victims of the Black Hole, about the spot where their bodies were buried in, or rather flung into, the ditch round the Fort. This monument was pulled down early in the nineteenth century, but now, after many years, is being replaced.

Holwell lived in England for 38 years after his retirement. It says much for his constitution that, after surviving the Black Hole, the journey in chains to Murshidabad after the rains, and 28 years' Indian service, he lived to the hale old age of 87. He died at Pinner, near Harrow, on 5th November 1798. He was the first medical officer serving in India to receive the honour of the Fellowship of the Royal Society.

Charles Weston—Served for some time as an apprentice to Holwell, while the latter was surgeon to the Calcutta hospital. He afterwards became a merchant in Calcutta, and served as a juror at the trial of Nancomai in 1775.

George Gray—First appears in the parish register of St Anne's as married to Miss Isabella Grayham (Graham?) on 21st January 1734. On 1st September 1737 his son, George, is christened. He is then described as Surgeon to the Factory at Kashimbazar. In 1754 he was one of the Surgeons at Calcutta, an appointment which he held at least up to 1759. A despatch to Court, dated 7th December 1755, states that he had asked for an appointment as writer for his son George, which was given. This must have been a great favour, for appointments to the covenanted services were very rarely given in the country. This appointment, however, was justified by results, as George Gray, junior, was one of three writers who were granted two years' extra rank and service for good service in the defence of Calcutta. Both the George Grays, father and son, were taken prisoners during the defence of Calcutta, but prior to the final surrender, so were not in the Black Hole. Both subsequently escaped and joined the other refugees at Fulta. Dr. Gray's wife and infant son, Charles, were also among the refugees at Fulta.

John Bristow—First appears in the parish register of St Anne's as married to Elizabeth Mackay on 18th August 1850. In 1756 he was at Balasore. Holwell, in a letter to the Court of Directors, dated 30th November 1756, writes of him "Buliamguiry, by its situation, having

escaped the Government's notice, and by the prudent conduct of Mr John Bristow (left Resident at Balasore by Mr Boddam), is still retained" Buliamgurry was at the mouth of the Hughli near Balasore

In the consultations of 28th April 1757¹ he was appointed Resident at Cuttack, during the war, on a salary of Rs 150 per month. On 10th October 1757, is recorded the receipt of a letter from Mr John Bristow, Resident at Cuttack, informing that he had raised the English flag in that city, that the house given for the factory is not capacious enough for the Company's trade, that Dedai Ally and Sheikh Manjee have offered a piece of ground fronting the river to build a house or fort, that for twelve or fifteen thousand rupees he can make a very complete factory, capable of resisting any country power, that he has visited Haryhaipore, that there is a good manufacture of white goods there, and that twenty or twenty-five thousand rupees worth of goods may be disposed of to advantage. The consultations of 3rd July 1758 record his removal from the Cuttack Residency. "As Mr Bristow's behaviour at Cuttack is not approved of by the Board, and as it is esteemed requisite at this juncture to have a person of capacity at that place, and one who understands the language, agreed that Mr George Gray, junior, be appointed Resident at Cuttack, and that Mr Bristow be recalled." He protested against his supersession, but without effect. On 1st February 1759 is recorded the receipt of a letter from Mr John Bristow, dated the 6th January, representing that the Rajah owes him a month's pay for fifteen soldiers and sixty sepoy, and that he had to pay them himself Rs 1,688, further informing us that though he joined the Rajah by our approbation, and commanded a party of Europeans and Topasses in the action by order of Colonel Forde, he was deprived of any share of the prize money, but that on account of his behaviour he was granted a present equal to a subaltern's share, viz, Rs 448, and requesting to be again appointed Resident at Cuttack. He died in Calcutta on 2nd December 1761.

George Alexander, Surgeon at Dakka, resigned his appointment from 11th October 1753, and was appointed surgeon of the *Montford*, in place of Joseph Lemon, deceased, on 20th December 1753, going home in that vessel.

Nathaniel Wilson, Surgeon's mate, was appointed to be Surgeon at Dakka, vice Alexander resigned, on 11th October 1753. He was still at Dakka in 1756, when the English factory there was taken by the Nawab's troops. The English residents were all taken prisoners, but set at liberty by the intercession of the French, and permitted to remain in the factory. From Dakka Wilson came to Fulta, where he served

for some time as surgeon of Kilpatrick's force. He died either at Fulta, or in Calcutta immediately after the recapture, in January 1757, as the Public Proceedings of 28th February 1757 record the payment of a bill to his executors.

Putham, William, Surgeon, is mentioned in the General Journal of September 1756. He may have been in Calcutta at the time of the siege in 1756. A Surgeon John Putham, possibly the same man, married Mrs Esther Pomfret, widow, on 18th July 1751.

William Ingles, or Engles, was appointed to be Surgeon's mate on 12th November 1753. On 20th February 1754, he was appointed Surgeon of the *Falmouth*, and went home in that ship. A letter from Court, dated 31st January 1755, states that he was permitted to return to India. He was reappointed to the Hospital in Calcutta, in Public Proceedings of 29th September 1755, and was killed in the siege of Calcutta in June 1756.

Owen Jones, Surgeon's mate, was permitted to return to England on 4th January 1754.

John Taylor was appointed Surgeon's mate in place of Owen Jones on 4th January 1754. He is the first medical officer of those here mentioned whose name comes into the list of the Bengal Medical Service, established on 1st January 1764, as he was certainly still serving in 1769-70, when his name appears as one of the Medical Officers who received a share of the profits of the Private Trade Association. His name, however, is not in Dodwell and Miles' list of the service. He was present in Calcutta during the siege in June 1756, but was taken prisoner before the final surrender, and so escaped the Black Hole. He escaped, and joined the other refugees at Fulta.

Henry Andrewes appears as Surgeon to the party serving at the Negrais, an island off the Burma Coast, on 30th January 1754.

John Knor was appointed to be an Assistant-Surgeon, in place of Ingles, gone home, on 11th March 1754. He was in Calcutta during the siege in June 1756, when it is mentioned that his house was burnt, but, like the other Medical Officers, was taken prisoner before the surrender, escaped, and got to Fulta. Public Proceedings of 29th September 1755 note that he was permitted to remain at the hospital, in spite of Mr Ingles' return. The same proceedings record on 25th March 1757, that he will be permitted to succeed to any vacancy that may happen. It is recorded that his wife and two children were among the refugees at Fulta. He died on 5th February 1758. Captain Mills' account of the capture of Calcutta says that two Dr Knoxes escaped. Two Dr Knoxes are also mentioned in the account of a sale of Madeira on 21st November 1757.

William Fullerton, the next name on our list, plays a more prominent part in history than any of his medical contemporaries, except Holwell. From 1754 to 1759 he appears as one of the

¹ Appointment of Mr John Bristow, a surgeon by profession, as the Company's Resident at Cuttack

two Surgeons to the Calcutta Hospital, the other being George Gray. He also was in Calcutta during the siege in June 1756, was taken prisoner, and escaped to Futta. On 8th December 1757, he was appointed to be Major of Calcutta for the ensuing year. In 1759 or 1760 he was appointed Surgeon to the Patna Agency, and greatly distinguished himself in the war in Bihar.

Broome (History of the Bengal Army, pp 281-283) thus describes the action on 9th February 1760 at Masimpur, near Patna, between the army of the Emperor Shah Alam, and the troops of Mir Kasim, Nawab of Bengal, commanded by Rani Narain, Governor of Patna, who was assisted by a few English troops. Only five officers were present, Captain Cochrane, commanding, Lieutenant Buck, of the Artillery, Ensign Windebeck, Volunteer Baiwell, and Dr Fullerton. The other four officers being all killed, "the only European officer now surviving was Dr W Fullerton, the Surgeon of the" [Patna] "Agency, who assumed the command. Finding that the day was completely lost, this little party commenced their retreat to the city, surrounded by the enemy, but by the coolness and steadiness of their conduct keeping the latter at a respectful distance. One of the two gun carriages having broken down, they were compelled to spike the piece and leave it on the field, but the tumble of the other having upset, Dr Fullerton halted the party, deliberately lighted it, and then resumed his march, by their cool and daring behaviour, this remnant of the party succeeded in making good their retreat to Patna."

The Emperor's troops then laid siege to Patna, Fullerton again distinguished himself in the defence. Broome writes (p 297) "The arrangements of the siege on this occasion were very different from the former unscientific and dilatory proceedings, the ability and energy of M. Law being chiefly instrumental in occasioning this change, the city was invested on all three sides, and batteries were opened with considerable effect, after five days of open trenches Monsieur Law resolved upon an assault on the south side, but the breach not being perfectly practicable, he supplied his party with scaling ladders, and having destroyed the flanking defences covering the point to be attacked, he made the assault in broad day, and that in so sudden and unexpected a manner, that the party had gained the wall before the alarm was given. At the first intimation of this attempt, Dr Fullerton, who had so greatly distinguished himself in the action of Mussempore, hastened with English *sipahs* to the spot, accompanied by several of the gentlemen of the factory, who volunteered their services as officers on the occasion, when they arrived, they found the ladders planted, and some of the French troops actually on the ramparts, a fortunate discharge of rockets, and the fire of the *sipahs*, quickly drove them back,

and Rajah Shitab Roy making a judicious sally at the same moment from one of the neighbouring gates, took them in flank; and compelled them to retreat with considerable loss."

Fullerton, like the other officers and civilians then at Patna, was taken prisoner when the English factory was captured by Mir Kasim's troops in 1763, and was the only one of the prisoners who was not included in the "Patna massacre," carried out by the infamous Walter Reinhardt, *alias* Sombre or Somu, on the nights of the 5th or 6th and the 11th October 1763. In this massacre perished eighteen civilians, viz, two members of Council, three senior servants, six factors, and seven writers, seven officers of Artillery, sixteen of Infantry, and four surgeons (Crooke, Ham, Campbell and Anderson). A monument in Patna city commemorates their fate. The names of the military officers are engraved on the monument also three civilians, Hay, Lushington, and Ellis. A letter to the Court of Directors, dated 19th December 1763, gives the names of the Civil Officers who were killed. The two members of Council were Hay and Ellis, a third, Amyott, had previously been murdered near Moughya. Two of the Surgeons, Crooke and Ham, are included in the list of civilians, two, Campbell and Anderson, are among the officers named on the monument. Both Campbell and Anderson left diaries which are still in existence. The latter is continued up to the day of the massacre, the last entry being an anticipation of the murder of the prisoners. His journal runs from 23rd June to 6th October 1763.

Broome (p 392) thus mentions Fullerton's escape. "Dr Fullerton, whose medical abilities had made him many friends, and even gained the regard of Meer Kasim Khan, was the only person saved from destruction, he was permitted to reside in the Dutch factory, from whence he shortly afterwards made his escape, and joined Major Adams' force as they approached Patna."

Broome also gives in full in Appendix T, pp 41, 42, Fullerton's account of the massacre, at which of course he was not present, but only described what he had heard from his captors. He also quotes the account of the massacre from the *Sar-al-Mutakherin*, which winds up as follows—"Of all the prisoners, not a man remained alive, save Dr Fullerton, who, by assisting professionally most of the *grandees* of the Court, had endeared himself to them, he even had Mir Kasim himself for an acquaintance and friend."

Fullerton resigned the Company's service between the date of the massacre and the end of the year, so just misses coming into the Bengal Medical Service, which was formerly constituted on 1st January 1764.

William Forth was Surgeon at Kasimbazar when the factory there surrendered to Siraj-al-

daulat in 1756 He was sent by the Chief, M^r Watts, to ask for terms, and then a second time went to the Nawab along with M^r Watts He escaped to Hughli The consultations of 31st August 1756, on board the schooner *Phœnix*, at Fulta, contain the following order—"Agreed that M^r William Forth be appointed also to procure intelligence among the Dutch and French, and to submit the same by every opportunity, and that M^r Warren Hastings at Cossimbazar be directed to remain there in order to observe their motions at Muxadavad" The consultations of 14th February 1757 note payment of D^r William Forth's bill for sundry disbursements at Hughli He asked leave to return to England on 20th December 1859, and left the service

Archibald Kew's career forms a good instance of how, in the eighteenth century in India, "one man in his time plays many parts" He was Surgeon of the *Dalaware* East Indiaman, and accompanied Major Kilpatrick's force from Madras to Fulta, after the capture of Calcutta in 1756 While at Fulta, he also acted as Secretary to the Council When the *Dalaware* was ordered home, he accepted a commission as Lieutenant, and was shortly afterwards appointed Quarter-Master to the Force In 1758 he had risen to the rank of Captain, and was one of eight Captains who resigned their commissions because they were superseded by a Bombay Officer, Captain Govin When he left the army he went home, but afterwards returned to India as a free merchant, settled at Patna, and engaged in heavy transactions in salt, the manufacture of which he greatly improved. At the time of the officers' mutiny in 1766 he returned to the army as a Captain in Sir Robert Baker's brigade at Patna, but when matters were peaceably settled a few months later, he again resigned

John Wilson appears as Surgeon at Vizagapatam on 26th December 1757, when he was paid a bill of 240 Arcot rupees for house-rent

John Hutton, on 20th December 1757, receives payment of a bill for the usual head money paid to the Surgeons of the Europe ships for care of the military On 5th March 1859 is paid M^r *Macredie's* bill for medicine and attendance on the soldiers landed from the *Prince George* On 24th May 1759, *Walter Maxwell*, Surgeon of the *Hardwick*, writes setting forth the justice of his demand for head money for the military and sepoys transported to Vizagapatam The last certainly, the other two probably, were Surgeons of Indiamen

Peter Smith—On 1st February 1759, orders are given to the "Buxey" (pay-master) to pay the bill for medicines and attendance on 78 of the King's detachment, rendered by M^r Smith, Surgeon of the *Warren* The name is hardly an uncommon one He may or may not have been the same as Peter Smith, who appears in November 1762 as Surgeon's mate to the troops at Patna, and examined for promotion "Proceed-

ings, 11th November 1762 M^r Peter Smith, Surgeon's mate in the army, having arrived from Patna, ordered the Secretary to direct M^r Clement Crooke to call to his assistance one or more of the Surgeons of the Europe ships and examine M^r Smith on his knowledge of his profession And after such examination they are to report to the Board whether they esteem him properly qualified to be promoted to be a Surgeon to the Army"¹ The powers that then were in Bengal appear to have anticipated M^r Biodick's committee, though no doubt the examination to which Peter Smith was subjected was less searching than those which the unfortunate officers of the R A M O will have to pass Smith passed, a good omen

Tyso Saul Hancock—A letter from Madras, dated 28th June 1759, in the Public Proceedings of 28th July 1759, says that M^r Hancock is permitted to remove from the Madras to the Bengal Presidency He was appointed Assistant-Surgeon in Bengal on 31st July 1759 He was appointed Surgeon to Kasimbazar, *vice* William Forth, but apparently never joined there, as he went home on 29th December 1759 He returned to Calcutta as a merchant, and died there in 1775

Assistant-Surgeon W Tust Tetch is mentioned on 6th August 1759 as "entertained some time since"

Clement Crooke, mentioned above as examining Peter Smith in November 1762, must then have been some time in the service, as he is spoken of as Head Surgeon in Calcutta. In 1763 he was in Bihar, and was one of the party under M^r Amyott who were taken prisoners near Monghyr on 21st June 1763, Amyott himself being killed The prisoners were taken to Patna, and there all of them, including Crooke, perished in the Patna massacre

Surgeon Ham, of Kasimbazar, and Drs *Campbell* and *Anderson*, Surgeons with the Army, were also among the victims of the Patna massacre An appendix to Anderson's journal, however, says that M^r Ham died at Monghyr

William Stuart appears as Surgeon at Kasimbazar in the proceedings of 10th May 1762

We have seen that the pay of the Surgeons in Calcutta in the early part of the 17th century, in Hamilton's time, was £36 per annum An entry in the Public Proceedings of 3rd October 1757² shows that it still remained the same then, as in the list of that date giving the half-yearly pay of the Company's servants George Gray and William Fullerton are shewn as drawing Rs 144 each, at £36 per annum *O! si sic semper!* Would that rupees were still worth half a crown each, eight to the pound! But Broome (p 558), giving the monthly pay of the

¹ Long's Selections, No 738, p 869.

² *Ib.*, No 249, p 101

different ranks of the army, under various circumstances, in 1756, shows the lowest rate of an Assistant-Surgeon's pay at military duty as Rs 62 per month. Probably Medical Officers in civil employ were expected to add largely to their nominal incomes, either by the practice of their profession or by trade. A remnant of this higher rate of pay in military than in civil employ is seen in the fact that to this day the pay of a civil surgeon is lower than that of an officer of the same rank with a regiment, by fifty rupees a month, the difference being usually made up to the former in other ways.

Pay per month in 1756, in Sonant rupees

	Surgeon	Asst Surgeon.
Pay in garrison, or at the Presidency	124	62
Half <i>batta</i> in Cantonment	93	62
Field <i>batta</i> within the Oarrumnassa or in Cantonment beyond that river	186	124
Double <i>batta</i> in the field beyond the Oarrumnassa	372	248

The Cairumnassa or Karamnassa is the river which divides Bihar, south of the Ganges, from the N-W P. The farther from Calcutta, the higher the pay—a contrast to the modern system of Presidency allowances.

The following notes refer to periods subsequent to 1st January 1764, when the Bengal Medical Service was founded, and so, strictly speaking, are foreign to our present subject, but may be found of interest.

A letter from Court, dated 9th May 1764, para. 15, gives the method of appointment of new Surgeons, who apparently went out at first on the chance of succeeding to a vacancy, as follows:—"We have permitted several persons to proceed this season to the East Indies to be entertained in the Company's service as Surgeons at any of our settlements where they may be wanted, if found deserving, next after such as have already been recommended. We now send you in the several packets lists of the names of such persons signed by our Secretary, and this method we shall practice in future, which you are to observe as a sufficient authentication."

Another letter from Court, dated 22nd February 1764, para 119, mentions private practice, and distinctly states that persons not in the Company's service must pay the Surgeons for their medical attendance. This is the first definite and official mention of the right to private practice which I have come across. "You inform us you have appointed two additional Surgeons at Calcutta, to succeed to the office of Principal Surgeons when those we have already nominated shall have been provided for, that some further assistance is necessary on account of the increased number of persons in our service, Civil and Military, we cannot but admit, but with respect to the inhabitants, they most

certainly ought to reward the Physicians who attend them at their own expense. We allow therefore of your said appointments on these conditions however that they are to be deemed assistants only, and that their allowances from the Company shall be proportionately less than the Principal Surgeons."

In the same year Government, in Public Proceedings of 1st November 1764, increased the pay of Head Surgeons by Rs 100 monthly. "Taking into consideration the great increase of expenses in Calcutta, arising particularly from the extravagance of the article of house rent, housekeeping, and servants' wages, and the inadequacy of the stipends of the Chaplains and Head Surgeons to defray these expenses, it is agreed to add to their allowances the sum of 100 current rupees a month to be paid by the Buxey as charges extraordinary."

A letter to Court, dated 30th September 1766, para 31, states that, on the abolition of private trade of individuals, an exclusive company was formed, consisting of the first three classes of covenanted servants, with Field Officers, Chaplains and Head Surgeons. The profits made were divided half-yearly between these officers. In 1769-70 nine medical officers received a share of these profits, varying in individual cases from Rs 2,250, which was the sum paid to six of them, down to Rs 1,031.

The medical services of the three Presidencies were founded on 1st January 1764, by an order, dated 20th October 1763, as described in my previous article. The Bengal Service at least was divided into two branches, military and civil, on 5th May 1766¹ as noted in the Proceedings of that date. "The Resident informed the Board that, at the recommendation of Lord Clive and General Carnac, the Select Committee had come to a resolution of proposing that the Surgeons should be formed into two separate corps, one for the Civil, the other for the Military Establishment, and by way of encouragement for Surgeons who can be depended on to remain in the Army, that the two Head Surgeons at the Camp should have the same indulgence in a share of the Salt Trade and privilege of the *Dustuck*,² as the other four Head Surgeons at this settlement." Men were, as the extract shows, transferable from one branch to the other, which after all is pretty much the same state of affairs as at present exists. And even then it seems that the Civil branch was preferred, to judge from the inducement of trade profits offered to the senior Surgeons in the Army, to induce men to remain permanently in military employ.

¹ Long's Selections, No 748, p 376

² *Ib*, No 765, p 385

³ *Ib*, No 836 p 428

⁴ *Ib* No 851, pp 439, 440

⁵ *Dustuck* should be *dastak*, literally hand clapping hence passport

¹ Long's Selections, No 591, p 282

The Proceedings of the Council, dated 24th October 1788, lay down that the members of the service all belong to one list, and those in Civil employment must be considered as only lent to the Civil Department. The minutes are much too long to quote in full, but the first article runs as follows—“*Rules and Regulations for the Medical Department of the Service—Article 1st*—Resolved and ordered that all Medical Gentlemen employed in the Company's service under this Presidency be continued in one General List,—that they have commissions granted to them, agreeable to their proper ranks as Army Surgeons,—and that, whenever employed in the Civil Line, they be considered for the time as lent only to that Department of the Service, and liable always to be recalled to their duty as military surgeons, under the restrictions and obligations of service which are annexed to their military commissions” The Governor-General, Lord Cornwallis, at the same time recorded a long minute on the subject, from which I quote the following extract “The first article, which continues all Medical Gentlemen under this Presidency on one General List, is conformable to the established practice of the service, and becomes necessary, in order to render them eligible to succeed to the station of Head Surgeons of General Hospitals. Hitherto their appointments have been by warrant only, but as they should be liable at all times to be employed as Army Surgeons, I have proposed giving them commissions, as in His Majesty's Service, which, by attaching them specially to the Military Department of the service, renders it proper that they should be considered as lent only to the Civil Branch of it while employed therein, and imposes those obligations of service on them, which every person accepting a Military Commission is necessarily liable to”

The Medical Board was established in 1786, and held its first meeting on 29th May 1786. James Ellis, Physician-General, was the first President of the Board, the other two members were Andrew Williams, Chief Surgeon, and John Fleming, Surgeon of the Hospital at headquarters (Calcutta). Mr Birch was appointed purveyor, and Edmund Bengough apothecary to the Board. On June 3rd, Thomas Gillies was appointed Secretary to the Board, whose duties at first appear to have been confined to supervising the Medical Establishments in Calcutta. It was only gradually that the Board developed into a body advising Government on all medical matters.¹ Gillies was a member of the service, Birch and Bengough were not.

A FURTHER NOTE ON THE OCCURRENCE OF TYPHOID FEVER IN THE NATIVES OF INDIA

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A communication on the subject of the occurrence of typhoid fever in the natives of India, has already appeared from this laboratory in the columns of the *Indian Medical Gazette*.* In this paper it was definitely shown that the serum sedimentation reaction, contrary to the deductions which could be drawn from Frey's observations, was quite reliable as an aid to the diagnosis of the continued fevers as seen in the native. Further, in this communication there was put on record a series of eleven cases of typhoid fever in natives. These cases were diagnosed definitely by means of the reaction which the blood serum gave with the bacillus typhosus. Many of them had been diagnosed clinically as typhoid fever, while, on the other hand, in some cases the diagnosis had only been settled by means of the serum test.

The present note consists of the record of a second series of ten cases of typhoid fever in the persons of natives of India. These cases all occurred in Poona, the patients with three exceptions having been under treatment in the Sassoon Hospital in that city. I am indebted to the kindness of Lieutenant-Colonel W H Henderson, I M S, Civil Surgeon, Poona, and to Dr Bharucha, Assistant Surgeon, for the short notes herewith given. In every instance the blood was collected by one of these gentlemen in the bent glass capsules figured by Wright. It was at once despatched to this laboratory. The observations were made microscopically by means of Wright's sedimentation tubes and a dead emulsion of typhoid bacilli. The technique, in fact, was the same as I have already described in the previous communication on this subject.

The following is a short note of these cases—

Case 1—Sitaram Bhikaji, Brahmin, aged 22, student of the Mule Training College. Patient was admitted into hospital on the 4th of February 1901. He stated that he had suffered from continued fever for eight days before admission. On admission he was very delirious and in a semi-conscious condition. His tongue was dry and covered with a thick fur, while there was considerable distension of the belly.

The bowels were constipated throughout. For temperature vide Chart I.

The nervous system continued to be severe for some days after admission, but after the first fall of the temperature to normal on the 13th February, a considerable improvement in these symptoms set in. After this date slow and steady progress towards recovery continued till his discharge from hospital on the 8th of March.

¹ Gleanings from the early Records of the Bengal Medical Department, by T H Hendley, C I E. In Proceedings of Indian Medical Congress of 1894.

The serum sedimentation reaction with bacillus typhosus was tested on the 7th February, viz., on the 11th day of the disease

The result was as follows —

DILUTIONS

Date.	10	20	50	100	Remarks
7th February 1901	Complete	Nearly complete	Marked	Marked	No higher dilutions

Case No 2—Venkatesh Rani, aged 18, Brahmin, student of the Male Training College. Patient was admitted into hospital on 14th March 1901. His relatives stated that he had been suffering from fever of a more or less continued type for three weeks before admission.

On admission he was very delirious and in a typhoid condition. The abdomen was much distended, while the bowels were constipated. For temperature *vide* Chart 2.

The patient's condition became gradually worse and he died on the ninth day after admission to hospital. Permission to perform a *post mortem* examination could not be obtained.

The serum sedimentation reaction with bacillus typhosus was tested on March 19th with the following result —

DILUTIONS

Date	10	20	50	100
19th March	Complete	Complete.	Nearly complete.	Trace.

Case No. 3—A Lewis, aged 14, Native Christian, school boy. Patient was admitted into hospital on the 21st June 1901. It was stated that he had suffered from fever of a continued type for a fortnight before this date. On admission he was delirious and much prostrated. For temperature *vide* Chart 3.

The bowels were constipated throughout. On the 28th June on three occasions there was a certain amount of blood passed per anum.

The temperature came to normal on the 5th July, and after this date convalescence was slow but steady. He was discharged on the 3rd August.

The serum sedimentation reaction with the bacillus typhosus was tested on 27th June with the following result —

DILUTIONS.

Date.	10	20	50	100
27th June 1901.	Complete	Complete.	Nearly complete.	Marked

Case No 4—Mahadeo Krishnaji, aged 21, Brahmin, clerk in the Forest Department. Patient was admitted into hospital on 25th June 1901, he had suffered from continued fever for about a fortnight before this date. This was a mild case, although there were considerable tympanites, and slight congestion of the lungs. The bowels were constipated throughout.

For temperature *vide* Chart No 4. After admission into hospital, the symptoms steadily improved. He made an uninterrupted recovery and was discharged 'cured' on 17th July 1901.

The serum sedimentation reaction with bacillus typhosus was tested on 27th June 1901, viz., about the 17th day of the disease. The following was the result —

DILUTIONS.

Date	10	20	50	100
27th June 1901	Complete	Complete	Marked	Trace

Case No 5—Dinkar Nilkanth, aged 19, Brahmin, medical student. Patient was admitted into hospital on July 8th, 1901, suffering from fever. He stated that he had been ill only for three or four days before this date. On admission the case was clinically diagnosed as one of typhoid fever, as some of the characteristic symptoms of this disease were well marked.

For temperature *vide* Chart 5.

The abdominal symptoms were prominent throughout. Tympanites was well marked, while the bowels were loose, and the stools had the appearance of what is clinically thought to be characteristic of typhoid fever. There was at no time any hæmorrhage. Cough was a distressing symptom.

The symptoms appeared to be improving, when on the 21st July, viz., about the 17th day of the disease, perforation took place, and death rapidly ensued. No *post-mortem* examination was allowed.

The serum sedimentation reaction with bacillus typhosus was tested on 20th July, viz., the day before death.

The following was the result —

DILUTIONS

Date	10	20	50	100	Remarks.
20th July 1901	Complete	Complete	Complete	Nearly complete	No higher dilutions

Case No 6—Maheshwar Krishna, aged 19, Brahmin, medical student. Patient was admitted into hospital on July 11th, 1901. He was then suffering from fever which he stated had been of about six days' duration.

For temperature *vide* Chart 6. From this chart it will be seen that there was a slight relapse on the third day after the temperature came to normal on the 24th July. The bowels were loose throughout, although diarrhoea was never severe. There was only slight tympanites.

The serum sedimentation reaction with bacillus typhosus was tested on the 22nd July, viz., on the 18th day of the disease, with the following result —

DILUTIONS

Date	10	20	50	100
22nd July 1901	Complete	Nearly complete	Trace.	Nil

Case No 7—Shirpati Bala, aged 26, Hindu, police constable. Patient was admitted into hospital on the 14th October 1901. He was said to have had continued fever for three days before this date.

For temperature *vide* Chart 7.

There was slight tympanites. The bowels were constipated throughout. The patient made a good recovery. It was a mild case.

The serum sedimentation reaction with bacillus typhosus was tested on the 23rd October, viz, on the 12th day of the disease. The following was the result obtained —

DILUTIONS

Date	10	20	50	100
October 23rd, 1901	Complete	Complete	Nearly complete	Marked

The remaining three cases of typhoid fever in the native of India, which I have to record,

occurred in the private practice of Lieutenant-Colonel W H Henderson, I.M.S., when he was acting as Civil Surgeon at Poona. Unfortunately owing to pressure of work Colonel Henderson was unable to obtain any detailed record or temperature chart of any of these cases. He has however kindly sent me a list of them.

The serum agglutination reaction was tested by me with blood collected and sent to Bombay by Colonel Henderson.

The following table gives the result of this examination —

	Caste	Date of examination	DILUTIONS OF SERUM				REMARKS,
			10	20	50	100	
Case VIII	Brahmin	26.4.1901, on 43rd day of disease	Complete	Complete	Complete	Complete	A case with a relapse a week after 21 days fever. Blood test was made at the end of the relapse.
Case IX	Hindu	3.5.1901, on 32nd day of disease	Complete	Marked	Trace	Trace	A very severe case which had four relapses.
Case X	Parsee	1.8.1901	Complete	Complete			No higher dilutions put up.

Such then completes the record of these cases. When it is considered that seven cases of undoubted typhoid fever were treated in the Sassoon Hospital during a period of nine months, and when the disinclination of the lower class of natives to go into hospital is taken into account, it seems justifiable to conclude that, in the city and bazaars of Poona, typhoid fever among the natives is probably not an uncommon

disease, much more common than is generally supposed.

In conclusion it is interesting to draw attention to the fact that out of these ten cases of typhoid fever, eight were Hindus and some of these, viz, six, were Brahmins. It has always been contended that Brahmins are peculiarly free from this disease, the probable explanation given being their strict vegetarian habits.

NOTES ON AN OUTBREAK OF SURRA WITH OBSERVATIONS ON THE TRYPANSOMA

By E. D. W. GRIEG, M.D. (Edin.), B.Sc.,

Lieut., I.M.S.

In the autumn of 1900, and also during the same period of 1901, this disease presented itself in epidemic form amongst the horses and mules of the Malakand Force. The latter outbreak being the more severe.

In October 1900 a number of cases of "Fever" occurred amongst the horses, and I was asked by the owners and those in charge to examine the blood and determine, if possible, the nature of the disease. The result of the examination showed the presence of the surra trypanosoma in the blood. The disease continued during October but began to die out in November, and with the exception of an occasional sporadic case did not recur until July 1901. From this date it increased and reached its maximum in October and has again died out during November.

I think it may not be without advantage to place on record the results of my observations

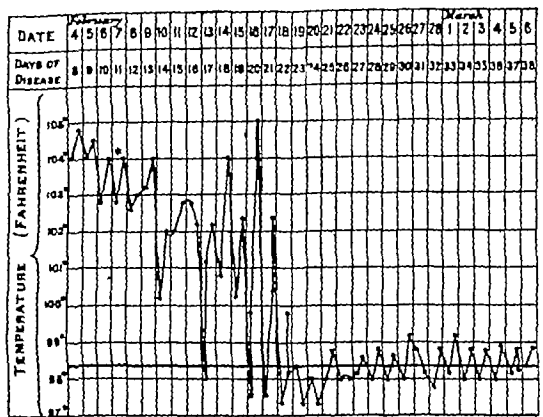
because (1) the early diagnosis of this disease is of considerable importance, and this nearly always can only be made after a blood investigation, hence it is essential that the morphology of the parasite should be as widely known as possible. Without this evidence it may be impossible for a Board to decide whether an animal is suffering from surra or not, and if unable to do so they cannot recommend its destruction whereas if the Board can certify that it is surra, then compensation is granted by Government for a registered animal destroyed by order of the Board. So that by the recognition of the disease a twofold advantage is obtained, viz, the elimination of a source of disease and the compensation of the owner. (2) The morphological characters and life history of the trypanosoma present many interesting and suggestive features for investigation.

As regards the number of animals attacked, it was roughly about 50 during the last outbreak.

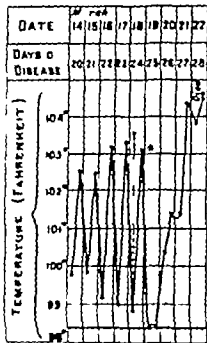
The period of the year during which the disease prevailed in epidemic form was from July to October, and in the latter month the majority of the cases occurred. As regards the locality it was found that practically all the

A FURTHER NOTE ON THE OCCURRENCE OF TYPHOID FEVER
IN THE NATIVES OF INDIA

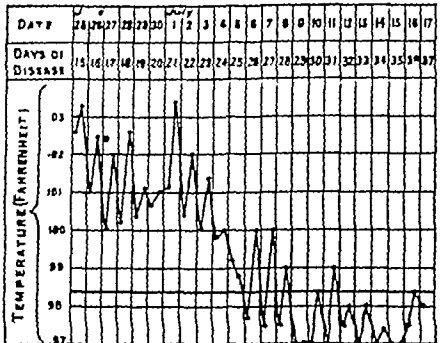
By GEORGE LAMB, M.B. (GLASG.)



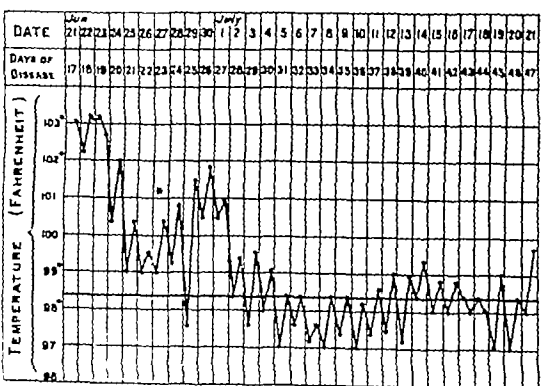
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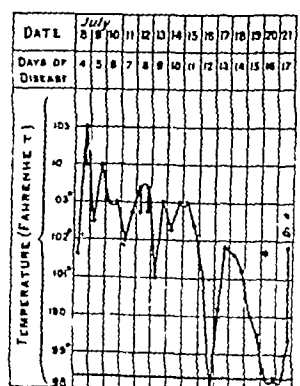
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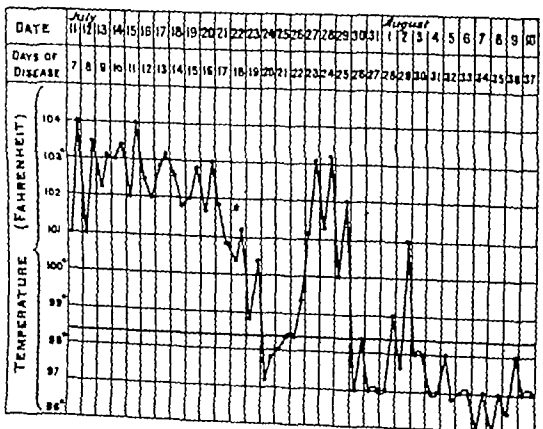
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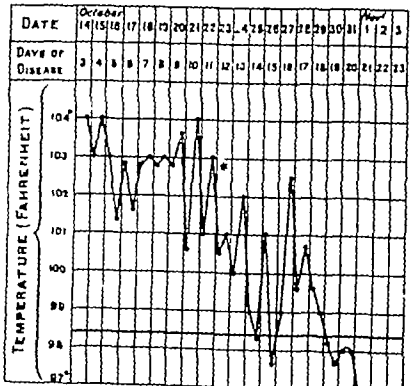
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cases occurred in the posts situated in the Swat Valley, namely, Khar Camp and Chakdara and almost none were observed amongst the animals in the other two posts—Malakand and Dargai. The time and place incidence of surra here practically coincided with that of malaria in the human subject. This fact is of considerable interest, as it suggests that the two diseases have for their production certain necessary factors in common, and more particularly that the disease may also require for its transmission from one animal to another some form of insect. The grass upon which the animals were fed was obtained from low-lying country, but not specially marshy. The grass was always dried in the sun before feeding the animals on it.

The symptoms and signs, which the animals suffering from surra presented, were essentially those of anæmia with fever. The fever is of a relapsing type. The signs of anæmia are seen in the marked pallor of the mucous membranes of the mouth and nose. The conjunctivæ are very pale and frequently present minute hæmorrhages, which often appear in successive crops and are considered of great diagnostic importance. Other signs of anæmia are dropsical swelling of the legs, marked loss of condition and general debility. *Post-mortem* examination shows no definite lesion. There is generally an exudation of serous fluid into the peritoneal and pleural cavities. The organs present the ordinary signs met with in cases of anæmia.

The name given to the parasite of this disease is *Trypanosoma* (which means a twisting body). In addition to surra, the tsetse fly disease of S. Africa and a disease met with in Algeria, are produced by organisms belonging to this group. Rats are often infected by a variety of *trypanosoma*. Lewis observed them in the proportion of 29 per cent in the rats of Calcutta, and Vandyke Carter, in Bombay, found 12 per cent. of the rats examined were infected. This question has recently been fully dealt with by Laveran and Mesnier.

In order to make out all the points regarding this parasite, it is necessary to study it in the fresh condition and also stained. As regards the methods employed, in the unstained specimens a drop of blood was taken, when the animal had fever, on a cover glass and allowed to spread out on a slide which was then rung with vaseline. A convenient place for getting blood from is the vein on the face below the eye. For larger quantities it may be taken from the jugular vein. For staining the method was that which Nakanishi¹ has recently used for observing the structure of bacteria. It depends on the fact that the blood serum is an excellent solvent for methylene blue. When the stain is mixed with the blood, the whole process can be watched and the various details of the structure of the parasite made out. The technique of the method is as follows—

A saturated watery solution of methylene blue was made. A number of clean slides were taken and heated over a spirit lamp, and, whilst still hot, a drop of the methylene blue solution was taken and spread out, as in a blood preparation, by means of another slide. This leaves a thin even layer of methylene blue. A number of slides may be prepared in this way and kept ready for use. When the blood is to be examined

a drop is taken, in the usual way, on a cover slip and this is placed on the prepared slide, and the drop allowed to spread out and then ringed with vaseline. The methylene blue is at once dissolved by the serum, so that the parasites are stained in a natural medium. This is a very good and rapid method for staining the malarial parasites. It is essential that the slides and cover slips should be perfectly clean.

The parasites can be seen with an ordinary high power lens, but, for making out the structure, an oil immersion lens is necessary. In examining the unstained preparations of the blood, the first thing to attract attention is a swaying movement of certain red corpuscles and then suddenly a small body shoots out from below them. This body has a very rapid cat-like movement, is always free in the serum, its length varies, but on an average is equal to seven red corpuscles, one end is pointed and the other terminates in a flagellum. It generally moves with the flagellum in front, so that it is customary to describe this as the anterior end. Near its posterior end a clear refractile body is seen. The parasite may be observed attacking individual red corpuscles. In order to make out the further details of the structure it is necessary to examine the stained specimens prepared by the method above described at first, when the parasites are actively motile, no staining reaction takes place, that is, living protoplasm does not take on the stain, but as the movements become slower, indicating the approach

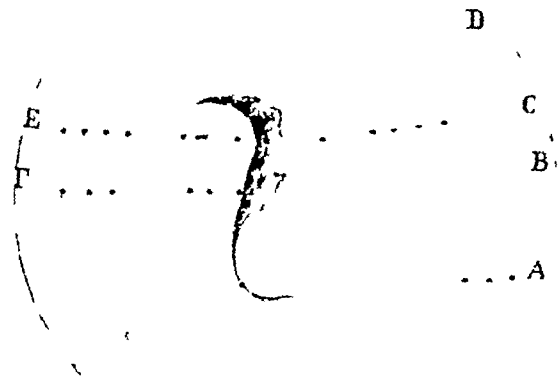


Fig. I

- a Flagellum
- b Undulating membrane
- c Edge of undulating membrane
- d Centrosome
- e Protoplasm
- f Nucleus.

of death, the reaction begins. In Fig. I the various details are represented. The flagellum (a) is seen to be continuous with the deeply stained margin of a clear unstained membrane called the undulating membrane (b), which runs along one side of the organism, and during life wave like movements can be seen running from its anterior to its posterior end. The deeply stained edge (c) of the membrane terminates posteriorly in or close to the refractile spot, seen in the unstained preparation, in the centre of which there is now seen a deeply stained small chromatin body (d), the protoplasm of the body (e) stained light blue contains a number of granules and is sharply separated from the uncoloured membrane. Towards the anterior end of the organism a larger mass of chromatin material (f) is seen. This is the nucleus. As to the exact nature of the small portion of chromatin near the posterior end there is some difference of opinion.

¹ M. M. A. Laveran et F. Mesnier—*Annales de L'Institut Pasteur* No 9, September 1901

Some regard it as a nucleus, others as a thickening of the posterior end of the border of the undulating membrane. Laveran¹ considers it a centrosome. It seems to play an important part in reproduction. When stained by the Romanowsky method, the nucleus, margin of the membrane and flagellum stain ruby red. The centrosome stains deep blue and the protoplasm light blue with granules in it.

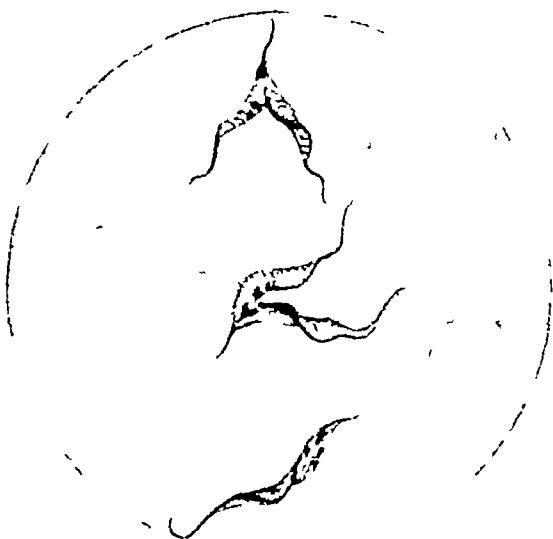


Fig II

Showing stages in division of the organism

As regards reproduction this takes place by longitudinal division. In Fig II several division forms of the parasite are reproduced. As a rule, when division is about to take place, the parasite elongates, and the large mass of chromatin comes near the smaller, they then each divide into two, but one may remain undivided, then the base of the membrane and flagellum divide. The resulting daughter forms may remain attached by their posterior ends for some time. The process is always of the same type viz., longitudinal division, but variations in the detail occur.

An interesting phenomenon which under certain circumstances can be seen in the blood is a clumping together of the parasites, in fact agglutination. The first stage is that two parasites approach one another and become united by their posterior ends, then several more join. These still continue actively motile, thus differing from bacteria, and try to free themselves, the flagellated end being at the periphery. The result of the pulling is to produce a rosette-like appearance. These points are well illustrated in Fig III, which is reproduced from a specimen showing this phenomenon. Laveran and Mesnier have studied this question fully in rat trypanosoma, and they find that if a little formal or specific serum be added to the blood the parasites become paralysed, and instead of forming the above described figures they run into irregular clumps. Hence the shape taken is dependent on the motility of the organism. This question of the retention of motility during agglutination is one of very considerable

interest, as showing, in this case, at any rate, that the substance which agglutinates is distinct from that which produces paralysis.

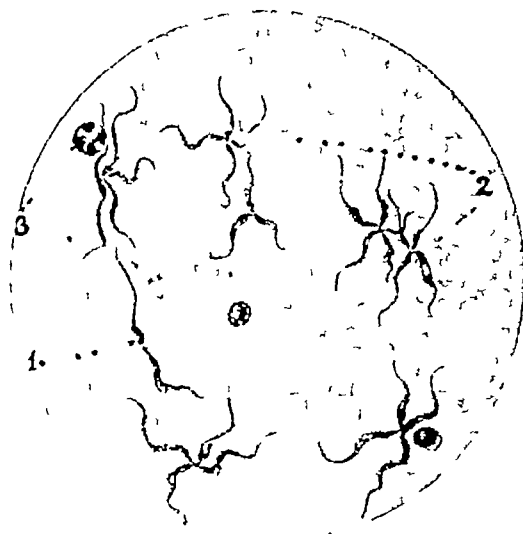


Fig III

Showing the agglutination phenomenon

- 1 1st stage
- 2 Rosette like appearance
- 3 Leucocytes.

As regards the question of immunity in this class of parasite, Laveran and Mesnier, from a series of experiments, are of opinion that both active and passive immunity is of a phagocytic nature, the variety of leucocytes being the mononuclear and to a less extent the polynuclear. This question of immunity is one which has important practical relations, especially in regard to the trypanosoma of surra.

As regards the mode of transmission of surra from one animal to another, there is as yet no definite information. In view of the fact, however, that the trypanosoma of the so-called Tsetse fly disease, which is practically identical with that of surra, has been proved to be carried from one animal to another by the Tsetse fly, it may be regarded as probable that this disease has for its transmission a special form of insect, which is as yet unknown.

The popular view of its etiology is, that the parasites gain entrance by the alimentary tract being introduced with the grass, and the particular variety of grass being that obtained from low-lying marshy districts. This theory does not explain why the disease should be limited to a particular period of the year, as the animals, in this outbreak, were eating the same grass all the year round, and why the destruction of diseased animals should tend to check the spread of the disease.

Much information on the various doubtful points might be obtained if a more extended research could be made in similar outbreaks of the disease.

¹ Nakanishi—Centralblatt f. Bakt. &c., No. 3, July 1901

THE THYROID GLAND AND PUERPERAL CONVULSIONS

By M. SINNATAMBY, M.D., F.R.C.S.,

De Souza Lying in Home, Colombo

My object in presenting this paper is to invite discussion.

The thyroid system consists of the thyroid gland proper and the four glandules known as parathyroids.

The thyroid gland secretes a colloid substance, which has been shown to consist of two proteid substances—one of which belongs to the class globulin and the other to that of nucleo proteid. The former, known as thyroglobulin, is the most important body, as it contains the active constituent and can be split up by the action of gastric juice or mineral acids into a proteid and another substance which gives no proteid reaction. This contains all the iodine (about 14 %) and is known as iodo thyrim. Very little is known about its chemistry beyond that it is not a proteid, and that it contains all the iodine in organic combination.

The iodine found in iodo thyrim must certainly be derived from the food, but the mere traces which are daily ingested in the food cannot account for the large quantity, daily secreted by the gland, unless the gland by its peculiar affinity stores up all the iodine by a process akin to the circulation of bile salts, that is, at least a portion of the iodine of the iodo thyrim after it has done its work is returned with what the food has furnished to the gland, there to be elaborated by the secreting cells into active iodo thyrim. Perhaps as I shall refer to later on, the parathyroids seize the iodo thyrim after it has done its work, split it into iodine and an innocuous substance, the former to be utilised by the thyroid and the latter to be excreted as a waste product.

Is the iodine the active molecule of iodo thyrim? Certainly not. Its place cannot be taken by the inorganic iodine or its compound, nor could it fulfil the therapeutic expectations of the latter, and its activity is due to the peculiar organic combination it forms. The iodine in the iodo thyrim may be compared with the iron in the hemoglobin, or rather hæmatin.

The thyroid also contains extractive bodies, such as xanthin, hypoxanthin, inosit, creatin, sarcosinic acid, etc.

The Functions of the Thyroid System of Glands

Experimental evidence, of which all are familiar, suggests the view that the thyroid and parathyroids are distinct glands, though associated with each other in some inexplicable way in their functions. The removal of the former in animals, causes symptoms known as chronic myxœdema, and of the latter, the acute symptoms characterised by tremors, unstable gait, paralysis, emaciation, weakness and certain eye symptoms, on or ex ophthalmos (Edmonds).

In man disease of the thyroid constitutes what is known as myxœdema and of the parathyroids' Graves' disease (Edmonds and Gley).

Thyroid feeding counteracts the effects of thyroidectomy, but parathyroid feeding does not in any way influence the effects of para thyroidectomy.

The urine of animals after para thyroidectomy is more toxic, and their blood will cause the same acute symptoms if injected into a healthy animal (Kantack and Sims Woodhead).

After complete thyroidectomy, certain changes have also been observed by W. Edmunds in the nerve cells of the cord, medulla, and brain. These changes were confined to the chromophilous elements—the nuclei bodies which underwent chromatolysis in the same way as these cells did in certain other forms of acute poisoning as pointed out by Dr. Mott. Dr. Blums has observed certain changes in the kidneys resembling those found

in cirrhotic kidney. After para thyroidectomy certain changes have also been noticed by Edmunds in the thyroid gland proper. They were diminution in the amount of colloid in the vesicles, which became altered in shape with a very large diminution of the iodine in the colloid. The secreting cells were devoid of colloid granules and became columnar, or multiplied and filled the cavity, with an increase in the amount of thyroid tissue. The lymphatic vessels of the thyroid did not contain any colloid substance. These changes appear to be identical with those found in enlarged thyroid of Graves' disease. It therefore becomes evident that the parathyroids are in some way functionally associated with the thyroid gland proper. The fact of the parathyroids containing more iodine, than the thyroid, in which it exists as iodo thyrim, and its considerable diminution, about ten times the normal quantity, in the colloid substance after para thyroidectomy, forces on one the conviction, that the glandules, in the manner already described, seize the iodo thyrim to split it into iodine and an innocuous substance. But then where does the thyroid proper receive the little which is always found after para thyroidectomy? Could it be from the thyroid itself, where tissues resembling parathyroids have been found, and conversely in the glandules tissues resembling the thyroid have also been noticed? (Cunningham). Or could it be that the mere traces, furnished by the food, would account for the little found? Again, another noteworthy factor should be explained, that is, complete excision of the gland and glandules is more fatal than para thyroidectomy. Could it be because the thyroid has certain amount of parathyroid tissue? These are problems which the future must settle.

I must now pass on to the consideration of the chief function of the parathyroids. Athyroider (complete removal of the thyroid and parathyroids) according to Walter Edmunds, Hutchison, Victor Horsely and some others, is a form of acute toxicæmia effecting the central nervous system. How do these glandules counteract the toxic condition? Is it by removing these toxic products or by elaborating an internal secretion which neutralises the toxins? Before answering these questions we must take into consideration the following facts—

1 Parathyroid feeding does not relieve the symptoms of athyroider, which may incline one to ascribe excretory or antitoxic functions to the glandules, but we should not forget that pancreatic diabetes is not relieved by pancreatic feeding.

2 The experimental evidence given by Dr. Blums in support of the antitoxic function of the thyroid gland is worthy of notice. He fed a number of dogs exclusively on meat diet, and others exclusively on milk diet. The mortality, after complete thyroidectomy of the former, was as high as 96%, the animals dying in 2 to 12 days and that of the latter was only 20%. The surviving 80% continued in good health as long as milk diet was continued, but on the substitution of meat diet many succumbed with acute symptoms in a short period. He thinks the idea of an internal secretion cannot explain away the difference in mortality in the milk fed and meat fed dogs. His conclusions, in short, are, that the thyroid gland possesses antitoxic functions, the toxins being derived mostly from the intestines, where meat forms a better pabulum than milk for bacterial fermentations.

His experiments are very interesting indeed but we cannot endorse his conclusions *in toto*. In the first place he makes no distinction between the thyroid gland proper and the parathyroids. In the second place he makes no attempt to explain the beneficial effects of thyroid feeding in myxœdema in man and in lower animals experimentally produced.

His experiments, however, furnish further proof that the parathyroids are possessed of antitoxic functions, that is, these glandules seize the entero-toxins and

other poisons, including iodo thyrim, and convert them into innocuous bodies

These experiments also explain the difference in the mortality of thyroidectomised, carnivorous and herbivorous animals (dogs and monkeys, rabbits, etc.)

Some explanation is also necessary, why some of the meat fed thyroidectomised dogs showed no acute symptoms. Could it be explained on the basis of natural or acquired immunity? If so, it will still further emphasise the antitoxic function of the glandules

With these facts before us, I must say I am forced to the conclusion that the glandules possess antitoxic functions

Has the thyroid system any other function besides those enumerated? Perhaps it has. The thyroid vein contains more red blood corpuscles than the thyroid artery. The gland itself contains throughout it certain nodules which resemble those found in the spleen. From these facts one would be inclined to conclude that the thyroid system of glands is concerned in the formation of red blood corpuscles (Halliburton)

Therapeutic uses of Thyroid extract

Thyroid extract has been used in the following diseases —

(1) Myxœdema, (2) Cretinism, (3) Goitre, (4) Exophthalmic Goitre, (5) Lipomatosis, (6) Insanity, (7) In operative carcinoma of breast, (8) Delayed union of fractures, (9) Alopecia, (10) Arterio Sclerosis, (11) Chronic Rheumatism

To the above list I may add —

(12) Bright's disease, (13) Parangi (Yaws), (14) Amenorrhœa, (15) Puerperal convulsions

I have only to do in this place with the last in the list

Puerperal Convulsions

During the 2½ years I have been in charge of the Lying in Home there occurred 1,233 labours, of which 19 cases were complicated with puerperal eclampsia, giving a frequency of nearly 1 in 66 labours, of the 19 cases 16 were primiparæ, nearly 85%. Albuminuria and dropsy were present in all except one. Urea not estimated, digestive disturbances were present in all. Enlargement of the thyroid gland was conspicuous by its absence, in all the cases that occurred during the current year (no observations were made with regard to this phenomenon in my previous cases). Not one of the twin pregnancies was complicated with eclampsia. Maternal mortality was five, giving a percentage of nearly 26%. Fatal mortality was thirteen, giving a percentage of nearly 68%. Of the fourteen recoveries four were complicated with puerperal insanity. In fact these were the only cases that occurred during the 2½ years. This fact is worthy of notice with regard to the etiology of puerperal insanity, I mean the toxic origin of the disease. In one fatal case in which a *post mortem* was held, there was extensive hæmorrhage into the brain, liver, and placenta.

In 18 cases eclampsia occurred before labour

In one case during labour

In none after labour

In 17 the presentation was head

In two " " " hand

In seven cases delivery was effected by forceps

In two by turning

In one by *accouchement forcé*

Eight were left to nature. One died before labour

Pregnancy is a normal physiological process, but the manifold changes that take place in a healthy pregnant woman places her at a great disadvantage in preserving the physiological equilibrium

The following changes occur in a healthy pregnant woman —

(1) Cardio vascular changes

(a) Hypertrophy of the heart

(b) Increased blood pressure

(2) Blood changes

(a) Increased volume

(b) Diminished specific gravity

(c) Deficiency of solid constituents

(d) Oligocythæmia

(e) Leucocytosis

(f) Increased coagulability

(3) Enlargement of thyroid and spleen

(4) Digestive and intestinal disturbances

(a) Salivation

(b) Vomiting

(c) Perverted appetite

(d) Constipation

(5) Changes in the urine

(a) Increased quantity

(b) Diminished solids

(c) Occasionally presence of albumen and sugar

(e) Increased toxicity

(6) Pigmentary changes

(7) Disturbances of the nervous system

(a) Headache

(b) Giddiness

(c) Insomnia

(d) Dimness of vision

What are the causes that bring about these changes? The cardio vascular changes which have their analogy in Bright's disease, the digestive and nervous disturbances which have their analogy in uræmia, the blood and pigmentary changes which have their analogy in malaria and pernicious anæmia, the changes in the urine which have their analogy in cirrhotic kidney, and above all toxicity of the urine and enlargement of the thyroid and spleen, clearly point to a form of auto intoxication within physiological limits.

Bouchard says "that man is constantly menaced by poisoning, he labours each instance for his own destruction, making incessant attempts at suicide, nevertheless this intoxication is not realised, for the organism has multiple resources to escape it." This auto intoxication in pregnancy is kept within physiological limits by the multiple resources referred to by Bouchard, and any inadequacy of these resources is bound to disorganise the machinery of physiological equilibrium. Puerperal eclampsia, is therefore a toxæmia, an exaggerated form of auto intoxication of the normal pregnancy due to inadequacy of the metabolic, antitoxic and excretory organs.

Before proceeding any further I would like to discuss the rôle played by the thyroid gland in pregnancy. That the thyroid gland is enlarged in normal pregnancy is a well established fact. What is the significance of this enlargement? It is simply an increased functional activity. During gravid state the organism requires a larger supply of thyroid excretion, and this compensatory enlargement can be prevented or reduced by thyroid feeding, and its conspicuous absence in eclampsia is also a noteworthy fact.

What is the nature of the poison or poisons that bring about this toxic condition of the blood in pregnancy? I do not pretend to know them, but before submitting certain facts and suggestions for discussion, I should like to refer, among the many views held by different authors, including that of Stroganoff, to the one advanced by Dubressen. According to this authority puerperal eclampsia is due to the circulation in the blood of creatin, which is believed to be an intermediate product of nitrogenous metabolism, that is creatin is a precursor of urea. In puerperal convulsions there is a diminution in the quantity of urea excreted with a corresponding diminution in the toxicity of the urine. This diminution of urea is not due to its accumulation in blood. The only explanation of these facts is that urea, the end product of nitrogenous metabolism, is not formed from its immediate precursor which accumulates in the system owing to inadequacy of the liver. Whether it is creatin, carbonate, or carbamate of ammonia or some other unknown

substance or substances future investigation must settle. The symptoms after Ecks' fistula (that is if the portal circulation is so directed into vena cava as not to reach the hepatic filter,) resemble those of puerperal eclampsia, and the ingestion of carbamate salts increases the severity of the symptoms. Iodothyron, the active principle of thyroid secretion, is essential for the activity of the metabolic organs. The increased work thrown on the liver in pregnancy is met by the increased thyroid secretion as evidenced by the hypertrophy of the gland. When compensatory enlargement is wanting in the thyroid gland, as is observed in puerperal eclampsia, the liver inadequacy results, and when the kidney fails to eliminate these intermediate products of metabolism, a vicious cycle is established with accumulation of toxic products in the blood.

Are these the only toxic products responsible for the toxæmia of puerperal eclampsia? I fear not. The intestinal tract, which is rich in its bacterial flora, elaborates in the healthy state certain toxins of bacterial origin, which are being constantly absorbed and destroyed by the antitoxic organs such as the liver, the parathyroids, and possibly some others. When there is inadequacy of the liver and the thyroid system, the toxins derived from the intestine, together with the intermediate products of metabolism, accumulate in the system.

In man, therefore, the defensive mechanism may be grouped under three heads—

(1) Metabolic organs whose function it is to transform the intermediate products of nitrogenous metabolism into end products, such as the liver.

(2) Antitoxic organs, whose function it is to arrest and transform toxic principles, such as the liver, parathyroids and perhaps the suprarenal capsules, spleen, lymphatic glands and the intestines.

(3) Eliminating organs, such as the kidneys, skin, intestines and lungs. The kidneys, besides acting as an excretory organ, have the property of rendering toxic products innocuous by a process of synthesis or splitting. It is also believed that the kidneys possess an internal secretion, which some way influences the metabolism (vide Bradford's experiments and the results of obstructive and non obstructive anuria).

The liver is the most important metabolic and antitoxic organ of the body. It is a well established fact that the liver has the property of destroying portions of alkaloidal poisons.

Pregnancy increases the production of toxic principles in several ways—

(1) Cessation of menses blocks up a channel for excretory products which must find their way through other channels.

(2) The metabolic products of the foetus have to be added to those of the mother, in twin pregnancy the products of metabolism are further increased so as to render the predisposition of such cases for eclampsia doubly great.

(3) Constipation with intestinal fermentation is another factor which increases toxic products.

As pregnancy advances, the toxic products increase, and inadequacy of the antitoxic, metabolic and excretory organs to cope with the increased work manifests itself. The symptoms of liver break down first shows themselves, they are dyspepsia, pyrosis and intractable vomiting. The first link in the break-down throws increased work on the kidneys and other antitoxic, metabolic and excretory organs, the second link in the break down is the inadequacy of the kidneys which shows itself by appearance of albuminuria, dropsy (the oedema is more or less solid and pits badly), diminished toxicity of the urine and diminished urea elimination. This establishes a vicious circle, with the result that the several organs fail to neutralise and eliminate the poisons which accumulate and culminate in the dreaded malady, puerperal eclampsia and insanity.

How far immunity plays any part in this form of toxæmia it is difficult to say. But the following facts are worthy of notice—

(1) This disease is much more frequent in primiparae than in multiparae. Note, 85 per cent of my cases occurred in primiparae.

(2) Second attacks occurs seldom or never.

(3) Athyroidæa is more fatal in young dogs than in aged animals.

The blood changes in experimental athyroidæa, and myxodema have a striking resemblance to those observed in pregnancy, i.e., oligocythæmia and leucocytosis. Athyroidæa, according to Walter Edmunds and several others, is a form of toxæmia.

Halsted found that partial removal of the thyroid in dogs did not result in tetany unless the dogs were pregnant, in which case tetany appeared one or two days before delivery.

Thyroid administration reduces the compensatory enlargement of the thyroid glands in pregnancy.

The absence of thyroid enlargement, as observed by me in the last series of cases, is the rule rather than the exception.

These facts induced me to try the effects of thyroid administration as a prophylaxis in cases of threatened eclampsia.

A multipara who had puerperal eclampsia in her first and second pregnancy was administered thyroid extract when oedema and albuminuria appeared in her seventh month of pregnancy. The administration was continued with a result that the patient passed through her crisis without any untoward symptoms. The oedema disappeared long before the commencement of labour, but traces of albumin in the urine persisted until puerperium was established. I have now two cases in the wards under observation. Thyroid treatment promises to steer them through into the harbour of puerperium without encountering the threatened storm of puerperal eclampsia.

My observations are not by any means sufficiently numerous to enable me to draw any conclusions, but as I feel convinced of the efficacy of thyroid treatment in this fatal disease, I do not think it premature to bring this to the notice of the members of this Association.

Before concluding, it may not be out of place to briefly sketch the line of treatment I would submit for discussion founded on two and a half years' experience.

1 Prophylaxis

Examine urine repeatedly during the later months of pregnancy and especially estimate the quantity of urea. If the examination reveals any diminution of the quantity of urea excreted, with or without the presence of albumin or dropsy, put the patient at once on thyroid treatment and milk diet, at the same time attending to the condition of the bowels.

2 Curative treatment

(a) To control convulsions use hypodermic injection of morphine in preference to chloroform.

(b) To promote excretion and dilution of the toxins use—

(1) Purgatives

(2) Diaphoretics—steam bath in preference to pilocarpin which induces oedema of the lungs.

(3) Diuretics, preferably diuretin

(4) Saline infusions

(x) Per rectum, or

(y) Per subcutaneous cellular tissue

(5) Vaso dilators, preferably trinitrin

(6) Cardiac tonics, preferably digitalis

(7) Stimulants

(8) Sedatives if necessary

3 Management of labour

(1) If labour has not set in, do not attempt to induce it.

- (2) If pains have commenced, no attempt at manual dilatation of the cervix should be made. Accouchement forcé is a brutal procedure and always leads to untoward results.
- (3) If os is three fourth or fully dilated, expedite delivery by artificial means.

Since using morphine to control convulsions, I have not lost a single case.

WEIGHTS OF HUMAN VISCERA (IN NATIVES OF BENGAL)

By W J BUCHANAN, M B

MAJOR, I M S,

Superintendent, Central Jail, Alipore,

AND

F J DALY,

MILITARY ASSISTANT SURGEON,

Assistant to Civil Surgeon, 24 Pergunnas

The following table is compiled from the records of the hospitals of the Central Jails at Bhagalpur and Alipore, and from the Morgue at Alipore, Calcutta.

It is believed that it may be found useful in as far as such tables may be. We are not aware of any similar table which has been published giving the weights of viscera of natives of India except the one given in the *Transactions* of the First Indian Medical Congress of 1894 compiled by Rai Bela Ram Bahadur, of the Lahore Medical College, for Punjabis.

The total number of cases is believed to be sufficiently large to enable us to draw a sound conclusion as to the probable average weight, the weights for both males and females are given. The highest and lowest weights found in the records are also given as well as the average. All were adults from 20 to 55 years.

TABLE

(Weights of Viscera, Natives of Bengal and Behar)

	No. of cases		Average weight in oz		Highest		Lowest	
	Males	Females	Males	Females	Males	Females	Males	Females
Liver	207	88	45	37.5	82	62	30	16
Spleen	188	91	10.5	6.8	64	48	1	1
Lungs, right	98	40	16	9.4	46	20	6	6
„ left	98	40	14.5	9.6	33	17	5	4
Heart	112	46	7	6	20	9	4	4
Kidneys, right.	120	68	4	3.5	7.5	6	2	1
„ left	120	68	4	3.4	7	6	2	1
Brain	17	7	45	37	51	42	41	26

The largest male liver weighed 82 oz and was found in a case of opium poisoning, the lowest was 30 oz only, in a youth of 25 years, who died of fracture of the skull. The highest female liver weighed 62 oz in the case of a woman who died of malarial cachexia, and the lowest was from a girl about 22 years, who committed suicide by hanging.

Tidy gives 50 to 60 oz for livers of European males, and 45 to 55 oz for that of females. The Punjabi male livers average 46 oz, and female 40 oz, according to Babu Bela Ram. The Bengal liver is, therefore, smaller than both that of the European and Punjabi, as might be expected from the lesser height and weight of the inhabitants of Bengal.

The largest spleen in this series was 64 oz for males and 48 oz for females, both from cases of malarial cachexia, and the lowest in both sexes weighed only 1 oz in old persons dying from what are recorded as “natural causes.” The average is 10.5 oz for males and 6.8 oz for females, whereas Tidy gives 5 to 7 oz for both sexes in Europeans, on the other hand, Bela Ram gives 17 and 13.2 oz for spleens of Punjabis. It is probable that the perfectly healthy spleen, in adult Indians, weighs only about 5 or 6 oz, but it is somewhat rare to find a spleen which has not once suffered from malaria.

The largest lung weighed 46 oz (right) in a male and 20 oz (right) in a female, the left lungs being of less weight. The average weight of both lungs was about 30 oz in males and only 19 in females. This is a low figure, as Tidy gives for males 45 oz and females 32 oz, and in Punjabis it is given as 34 oz and 29 oz respectively. It is probable that both lungs, weighed separately, work out less than when they are weighed without separation, for of 35 cases where both lungs were weighed together they averaged 46 oz. The large heavy lungs were in all cases due to pneumonia.

The heart—Of 158 cases the male heart weighed 7 oz on the average, and the female 6 oz. The largest heart (male) weighed 20 oz in a case of valvular disease. These weights are the same as is given for Punjabis, but 2 oz less in each sex than given for Europeans.

The kidneys in 120 males and 68 females weighed 4 oz and 3.5 oz respectively, the largest being 7 oz and the smallest 1 oz. These figures are the same as for Punjabis, and but a little less than those given for Europeans.

We were not able to get many records of brain weights, but in seventeen cases in males the brain averaged 45 oz, highest 51 and lowest 41 oz, the highest being from a case of cerebro-spinal fever, and the lowest a case of cerebral hæmorrhage. The highest female brain weighed 42 oz and lowest 26 oz. The latter was in a fatal tramcar accident case in a feeble old woman.

A Mirror of Hospital Practice.

FIVE CASES OF PERINEAL LITHOTRITY

By HENRY SMITH, M.D., M.Ch.,

CAPT., I.M.S.,

Civil Surgeon, Jullundur

SINCE the 1st of January 1900 I performed six perineal lithotrities out of about 180 cases of stone in the bladder up to the 1st May 1901, one of which perineal lithotrities, was published in a former issue of the *Indian Medical Gazette*, January, p 15 (1901)

(1) A man of about 70 years of age with a diseased bladder and a prostate, past which it was difficult to negotiate an instrument. There were three stones in the bladder about an ounce weight each, chiefly phosphatic. They were removed by a crushing forceps through a small lateral lithotomy wound. The man made a perfect recovery.

(2) A man about 25 years of age with a stricture and a perineal fistula, with a stone, chiefly phosphatic, about an ounce weight. It was removed with a crushing forceps through a small lateral lithotomy wound, the stricture being treated a few days afterwards. He made a perfect recovery.

(3) A boy with a bladder in which there was a septum. The sound on being passed into the bladder detected a stone. The lithotrite on being passed did not detect a stone, as there was something strange about this, I decided to cut him. The staff when passed struck the stone. I cut him, and, on insertion of my finger, found that there was a septum in the bladder and that the stone was lying on one side of it. Both sides of the septum communicated freely towards the prostate. The stone was removed with a crushing forceps. The boy made a perfect recovery. This is the second case of a bladder with a septum which I have come across in operation for stone. The first case I published in the *British Medical Journal* in the summer of 1897. I am and was fully aware that the current embryological theories do not explain such an anomaly as a septum in the bladder. The fact remains, I see no more reason why a fold in the blanda might not develop into a septum in the bladder than that the septum constituted by the fusion of the Mullerian ducts should disappear.

(4) A man aged 40 years. A Weiss' "A" number lithotrite could not be passed. A Weiss' "B" number lithotrite was not powerful enough to break the smallest grip of the stone which could be got hold of. I made a small lateral perineal incision into the bladder and inserted by the wound a No 26 lithotrite with which I broke it up. I removed the fragments with a crushing forceps with a set of clippers round the edge of the blades so as to remove the sharp fragments which are liable to project over the edges of the forceps and to injure the prostate in extraction. The stone weighed four ounces and was a mixture of urates and oxalates. The following day he complained of tenderness above the pubes and tympanites and had a temperature of 100° with symptoms of general depression. Very little urine was coming from the wound. Symptoms were treated. He died about 40 hours after operation.

Post mortem—It is very seldom we are able to do a *post mortem* on such cases in this Province. There was extravasation of urine into the cellular tissue round the bladder and pelvic peritonitis. The bladder was small and thick and studded over thickly with nodules

like small mucous polypi but harder. Between the entrance of the ureters and the prostate there was a pouch, in which the stone had rested and had grown. The walls of this pouch had some nodules like those above described, but the bottom of it had no proper bladder tissue. The extravasation had taken place from the bottom of this pouch. The right ureter would admit the index finger from the pelvis of the kidney down to its entrance into the bladder, which latter, though patent, was tight. The left ureter from the pelvis of the kidney down to its entrance into the bladder, which was also tight, was about the size of the small intestine. The pelvis and infundibulae of the left kidney with the kidney itself constituted a large sac full of a mixture of urine and pus. The left kidney had very little secreting tissue left. The right pelvis, infundibulae and kidney were similar to the left, but less in degree. The wound at the *post mortem* looked healthy and would admit the index finger. If I had done a lithotomy in this case, I would have given myself the credit of having burst the pouch with the pressure of the fluid in the evacuating process.

(5) A man aged 40 years. The stone was too big and too hard to be dealt with by a lithotrite which would pass by the urethra. A small lateral perineal incision was made into the bladder, and the stone was broken up with a No 26 lithotrite passed by the wound, and the fragments, weighing six ounces of a mixture of urates and oxalates, were removed by a forceps, same as used in case No (4).

2nd day Temp	97°	Rum and milk diet
3rd " "	97°	Bowels moved. Rum and milk diet.
4th " "	97°	Symptoms of heart failing, four motions. Infusion beneath the breast of 60½ warm normal saline solution. Diet, Valentine's meat juice and brandy.
5th " "	97 6°	Three motions. Pulse good. Valentine's meat juice and brandy and rennet whey <i>ad lib</i> .
6th " "	98 4°	No motion. Pulse good.
7th " "	98 4°	No motion. Pulse good. Doing well. Diet, milk and brandy.
8th " "	98 4°	Same as on 7th, with sodæ sulph sodæ bicarb grs xxx.
9th " "	98 4°	Same as on 7th. Bowels moved.
10th " "	97°	Pulse weak. Extremities cold. Two motions. 60½ normal saline infusion beneath the breasts. Diet Valentine's meat juice, rennet whey <i>ad lib</i> , and brandy.
11th " "	97°	Same as on previous day, but worse.
12th " "		Died during the night.

Post mortem—The bladder was about half an inch thick. The wound admitted the index finger and looked healthy. There was the shank of what had been a dumb bell stone recently broken about the thickness of the shank of an ordinary clay pipe presenting from what on incision turned out to be the orifice of the left ureter. On incision it was found to be growing from a stone over an ounce in weight situated in a sac in the distal end of the ureter, which sac was constricted both proximally and distally to the body of the stone. Evidently the stone removed at the time of operation was the other end of the dumb bell. There was another small sac between the entrance of the left ureter and the prostate containing a pebble. This latter sac was tight mouthed also. The communication of the left ureter with the bladder was round the stone in its distal end. The orifice of the right ureter was completely occluded, and the right ureter had in its distal end a pebble. The left ureter was about the thickness of the small intestine. The right ureter was almost as thick as the aorta. The pelvis and infundibulae of each kidney were dilated and contained about 6½ each of purulent fluid mixed with urine. The bladder, ureters, pelvis and infundibulae were covered with a thick chronically inflamed mucous membrane. There was about a sixth of an inch of kidney tissue over the sacs constituted by the dilated infundibulae.

CHRONIC INFLAMMATIONS OF LYMPHATIC GLANDS IN RANGOON

By C. DUER, M.B., F.R.C.S.,

CAPTAIN, I.M.S.

CHRONIC inflammation of lymphatic glands leading to enlargement, to suppuration or caseation, to implication of the skin and the formation of sinuses is exceedingly common in Rangoon, and would seem to be more common than elsewhere. In support of this it may be mentioned that out of a total of 579 "selected operations" performed at the General Hospital, Rangoon, during the year 1900, 143 were for the removal of enlarged and inflamed lymphatic glands.

Tubercle accounts for a considerable number of these cases, the patients being generally children or young adults, and the glands affected being principally those of the neck. Many of the cases are most inveterate, the groups of glands becoming enlarged one after another. Occasionally the axillary glands are also involved. The above is not difficult to understand when it is remembered how frequent and progressive tubercle of the lungs is in Rangoon, and how futile any treatment (including the open air treatment) is in its arrest.

Excluding the evidently tubercular cases, a majority of other enlarged chronically inflamed lymphatic glands remains. They appear to be of syphilitic origin. While plenty of stress is laid on the enlargement and induration of lymphatic glands in early syphilis, an enlargement usually unattended with suppuration, little or nothing has been written of this chronic enlargement, in the later stages going on to suppuration and the formation of sinuses. The history of such a case is as follows. The patient, who may be of any of our numerous nationalities, has suffered from chancre some months to two or three years previously. Then the glands of one or both groins enlarge gradually with little or no pain. After some weeks they form definite and visible tumours. Later on points of suppuration and abscesses form, the skin becomes adherent and sinuses result, which continue discharging thin pus for months. The glands most usually affected are those of the groins, the inguinal and femoral being all involved and sometimes also the iliac glands. Both groins are most often affected, but one is generally worse than the other. The axillary glands are sometimes attacked by the disease. The masses removed from the groins and axillæ will sometimes approach the size of a fist. The glands are purplish in colour externally and are generally fairly easily removed, there being not very much tendency to peradenitis. They are hard in parts and soft in others, presenting numerous points of

suppuration and in the later stages containing abscess cavities. Early removal *en masse*, together with the surrounding fat, appears to be the only efficient treatment, and the sooner this is done the more rapidly will the wound heal. When sinuses have formed, the implicated skin should be removed with the mass. Occasionally a sinus will be found opening on the inner side of the spermatic cord and passing beneath it, a fact worthy of remembrance. After removal of a large mass dipping under the femoral vessels on the inner side (the glands in the crural canal will generally be found affected), a large cavity is left and primary union seems hopeless to expect. The axillary glands, together with the axillary fat in one mass, can generally be readily removed right up to the apex of the axilla without any division of pectoral muscles, and if the skin is not much implicated, primary union can, as a rule, be obtained.

Further, without any reason to suspect tubercle or syphilis, lymphatic glands appear specially liable to become inflamed from slight causes. I have frequently had to remove large suppurating glands, where the only assignable cause was unusual exertion, such as a day's snipe shooting or an extra round or two of golf. In one case (an unpleasant personal experience) a slight but persistent conjunctivitis of the left eye, of about a month's duration, led to great enlargement of the glands from the zygoma to the angle of the jaw of the same side, necessitating an operation by Captain Barry. The conjunctivitis, in spite of all the usual applications, persisted for more than two months and then suddenly got well. The glands had been enlarged for quite a month before Captain Barry's operation, which consisted in the evacuation of a little pus just below the zygoma and a second deep incision behind the angle of the jaw and I believe the evacuation here of a small quantity of pus deeply situated. The enlargement soon subsided and the pain, which every night with clock-like regularity had been intense, soon passed off. This case appears worthy of record as one of conjunctivitis leading to lymphadenitis and is in my experience unique. It would seem surprising that such is not of frequent occurrence, especially in gonorrhoeal ophthalmia.

When we remember how exceedingly prevalent tuberculosis is in Rangoon, the fact suggests itself that all these cases of chronic lymphadenitis may be due to the growth of tubercle bacilli in tissues, the vitality of which has become lowered by some irritation, even of slight severity. Though the inflamed glands mentioned above as of syphilitic origin have frequently been examined by Captain Barry and Captain Rost, tubercle bacilli have never been discovered in them. I believe, though, that the demonstration of tubercle bacilli in typical tubercular glands is often a matter of great difficulty.

A CASE OF COMPOUND DEPRESSED
FRACTURE OF THE SKULL FOLLOWED
BY HERNIA CEREBRI, WORD BLINDNESS,
THE FORMATION IN THE WOUND OF A
CYST, WHICH DISCHARGED CEREBRO-
SPINAL FLUID—RECOVERY

By E. R. ROST, M.D.

CAPTAIN, I.M.S.

Rangoon

A BURMESE woman, aged 20, had received numerous cuts on the head by a *dah*. The most severe wound was on the left side of the head, four inches long, behind and above the left ear, over the position of the left angular gyrus.

An area of skull of about three square inches was depressed, and a good portion of this was completely knocked into the brain substance.

The depressed bone was removed, and some brain substance was also taken away, as portions of bone were imbedded in it.

After operation, there was no paralysis and the woman was cheerful, she had a high temperature for some days and hernia cerebri set in. Every morning some brain substance came away and fungated out of the wound, after ten days it became obvious that certain cerebral symptoms were setting in.

She complained of great pain in the head, and giddiness and vomiting, she had lost her memory for visual words that is to say, her visual word dictionary in the angular gyrus was wiped out and objects shown to her which she knew she could not name.

The wound was dressed with oil silk and syringed out daily with sterile warm water.

On the 18th day the wound had commenced granulating up, and the hernia cerebri ceased fungating. Her temperature rose to 102°F, and remained high for three days, during this time, a plentiful clear discharge of cerebro spinal fluid poured out from the wound. She had vomiting and great pain in the head.

These symptoms entirely ceased on the 21st day, and the wound was progressing well till the 31st day when the same thing recurred, the temperature went up to 103°F, the attack lasting three days.

A swelling at the lower end of the wound appeared, about the size of a walnut, which became tender and tender.

On the 40th day, the temperature again rose and the swelling became tender till it burst, discharging clear fluid, while the temperature synchronously fell, and the other symptoms subsided.

On the 47th day, the process was repeated only more severely and lasted for a week.

On the 57th day, the process again recurred, lasting for two days only, the cyst bursting and

the temperature falling as before, after this the swelling gradually contracted down and the wound completely healed.

The patient had optic neuritis, but was quite well and regained her visual word memory gradually.

A point of great importance in this case was that words like "water, air, food, sleep, father, child," &c, were not expunged, apparently these words are not dictionaryed in the visual word centre, being used abstractively. Again, on asking what "hand" was, she could not say the Burmese word "lat," but when she was asked, "please show your hand" she showed it, and when "please show your teeth," she showed her teeth, but could not say the word for tooth when I pointed to my teeth. She was always greatly distressed at not being able to recall a word.

Unfortunately the girl was illiterate.

From the large amount of brain substance that came away it would appear that the cyst which formed in the wound was in communication with the lateral ventricle.

THE USE OF COCAINE IN MINOR SURGERY.

By P. V. SHIKARE,

L.M.S.,

Sassoon Hospital, Poona

COCAINE is mentioned as a valuable local anæsthetic, but I do not know how far it is actually used in minor surgical operations, beyond the domains of ophthalmic and throat surgery. In these two classes of operations, it is applied to the part operated upon either in the form of a spray or of a lotion, but its use as a subcutaneous injection in small surgical operations, e.g., in removal of small tumours, &c, has not, I believe, been extensively tried.

Latterly I have had opportunities of trying subcutaneous injections of cocaine in several such cases, and found its use to be quite satisfactory and far more convenient than the administration of a general anæsthetic inasmuch as the latter involved considerable waste of time, and often left its after effects, especially vomiting, which were trying to the patient. In fact, it was the considerable amount of saving in time which led me to prefer cocaine to a general anæsthetic in my first few cases.

The method I adopt is shortly this. First I make the part to be operated upon thoroughly aseptic, and then, with a hypodermic syringe, inject about ten to fifteen minims of a 4 per cent solution of Hydrochloride of Cocaine. If the surface involved in operation is a small one, I move the needle all round under the skin while injecting the solution, after pinching up a fold of skin at the seat of injection, but if the surface is comparatively a wide one, I inject the solution by making punctures in three or four

places This step is necessary in my opinion in order to thoroughly anaesthetise the part, especially when there is some amount of dissection required The part is ready for operation in a few minutes after the injection

In this way I have successfully removed tumours—sebaceous cysts, lipomata, chondromata (from the cartilage of the ear), varying in size from an almond to that of a mango, done circumcisions and other little operations best included under the term minor surgery The class of patients operated upon included a few females and children as well as males As a rule they did not feel the knife in spite of some amount of dissection that was required in a majority of the cases It was towards the end of the operation, *ie*, at the time of making sutures that some of them evinced signs of pain, but it was probably because the effect of the drug was passing off at the time For, I take it that even after a subcutaneous injection, the anaesthetic effect of cocaine does not probably last longer than half an hour at the most

A word as regards the depressant action of the drug on the heart It was only once that I noticed symptoms of partial collapse in a case I was operating upon The patient, who was a well-built muscular male adult and who had a sebaceous tumour removed from the dorsum of his foot, became pale over the face all of a sudden, his pulse was felt to be feeble, and the surface of his body was cold and clammy, but his consciousness was not impaired in any way He, however, speedily came round with the aid of stimulants, and the operation was proceeded with

In conclusion, therefore, I can safely say that a subcutaneous injection of cocaine is a speedy and convenient mode of producing local anaesthesia in minor surgical operations, and that with the usual precautions its use is not attended with any risks

A CASE OF HERNIA IN THE RIGHT HYPOCHONDRIAC REGION

By R K GUPTA,

Assistant Surgeon

On the 8th of June 1900, I was called to see a boy of twelve years old said to have been suffering from enlarged liver while I was in charge of Behar Dispensary The boy was being treated by a retired native doctor and a hakim for the above complaint but without any relief

Previous History—While the boy was in his village residence, at a distance of eight miles from Behar, on his trying to get up after finishing a call of nature he suddenly felt pain in the abdomen About a couple of hours after he noticed a swelling on his right side of

abdomen, which increased to size of an egg on coughing A Native Baird was sent for, and he treated the case for enlarged liver and ordered fomentation

At about 9 P.M. on the same day the boy felt shivering and had strong fever The part was also very much swollen and painful to touch

Next day he proceeded to Behar and placed himself under the treatment of a native doctor and a hakim, who also treated the boy for enlarged liver

Present condition—The boy's temperature was never below 100°F Bowels constipated There was a diffused swelling two inches below the right costal arch Percussion over the swelling was resonant On close examination, the diffused swelling was noticed quite separate from the lower border of left lobe of liver

Treatment—I at once diagnosed the case to one of hernia and ordered continuous application of ice on the part, had the bowels cleaned by an enema and put the boy on light diet and enjoined perfect rest

Early next morning I went to see the boy again, and I found the swelling entirely subsided Only the part all round was very tender On examination of the site of swelling I found a gap in the muscular parietes, about the size of half a rupee, admitting the tip of a finger freely to the abdominal cavity The temperature fell to normal

Remarks—In appearance the swelling bore a striking resemblance to enlarged liver The history of sudden appearance, the size increasing on coughing, and tympanic percussion were the characteristics which could not be mistaken for any other disease

THE SOUTH AFRICAN KAFFIR

The average coloured man, who was, as a rule, employed in connection with transport, cattle, &c, was very insensible to pain Operations could be done without an anaesthetic, which would be impossible in the case of a white man I saw a number of bullet and gunshot wounds amongst these people, including two cases of compound fracture of the femur, and one of compound fracture of the skull, one produced by a shot gun at close range and the other by Mauser bullets In the former case, which was very septic, amputation at the hip-joint had to be performed In the second case, extension and a long splint to the thigh gave a good result In the third case, there was a compound fracture of the skull, a wound through scapula and shoulder-joint, and a wound through bones of face Operation in this case was unsuccessful The wounds were infected and crawling with maggots I saw amongst Boers and coloured men several cases of such wounds The wounds had not been treated, and were "alive" with maggots, which dug out large cavities under the skin, and in one case produced gangrene

The cases of shell wounds which I saw were lacerated, difficult to heal, and often necessitated amputation

Generally speaking, it appeared that bullet wounds in a healthy subject healed with great readiness, amputation being rarely required, and impaction by bullets not common in proportion (*Caledonian Medical Journal*)

THE
Indian Medical Gazette
FEBRUARY, 1902

THE ROBERT HARVEY MEMORIAL FUND

It has been decided to open a subscription list in the columns of the *Indian Medical Gazette* for a memorial to the late Surgeon-General Harvey, IMS

When the subscriptions have come in, and their total amount known, it is proposed to hold a meeting to discuss the form that the memorial shall take

Meantime subscriptions are invited from all friends of the late Surgeon-General. All such subscriptions should be sent endorsed, "Harvey Memorial Fund," to the Editor, *Indian Medical Gazette*, care of Messrs Thacker, Spink & Co, with which firm the moneys shall be banked

Suggestions are also invited from subscribers as to the form the memorial shall take

It has been suggested that the subscriptions should be limited to Rs 32, on the other hand, others have asked that no such limit shall be fixed

Several medical officers have already sent in their subscriptions, and many more have promised

We shall publish a full list in our next number, all subscriptions shall at once be acknowledged on receipt

THE SANITARY COMMISSIONER'S NOTE
ON JAILS

THE annual note by the Sanitary Commissioner with the Government of India on the sickness and mortality in the jails of India in 1900 has this year been modified, inasmuch as instead of two such notes appearing, as formerly, one only has appeared, viz, the one which corresponds to the jail section of the Sanitary Commissioner's Annual Report

The present report is therefore in the form familiar to all those who have read those extremely useful and voluminous annual reports. It begins by giving a synopsis of the sickness and mortality in the prisons of each province in the year 1900. The year was not a good

one, and as a consequence the health of the prisoners was not up to the standard of recent years

We have already (*Indian Medical Gazette*, 1901, p 393) given a somewhat full résumé of the reports of the various Inspector-Generals of Jails, and therefore only here propose to deal with special points or views put forward in the present note

Coming therefore to the section of the chief diseases, we note that there was an increase in influenza—a disease which has alternately increased and decreased in India since its reappearance in epidemic form some twelve years ago. It is noted that this disease was prevalent in 35 jails, more especially in Rajshahi and Bareilly. It is, however, probable that this by no means indicate the whole prevalence of the disease, for in our experience influenza is a pretty regular visitor in India, and usually appears twice a year, in March and October. The disease in fact is endemic in India now, and unless it is very prevalent and severe it is often returned as only bronchitis

Cholera was very prevalent in India in 1900 as the Provincial Sanitary Commissioners' Reports have shown, and in consequence appeared often in the jails. The Andamans as usual were free, but 70 other jails in India returned cases. The Sanitary Commissioner remarks that, while the "arrangements in force for the prevention of the spread of cholera in jails are generally effectual, those for the defence of jails against the entrance of cholera are still defective," and recommends that new prisoners should be detained in observation wards. As a matter of fact, orders exist for the segregation of all new admissions, but it is not always possible to do so effectually, as prisoners under trial are also kept in jails and go to and come from the courts as long as their cases are undecided. Moreover, even if such segregation was everywhere in force cases of disease occurring in such persons would still be shown in the returns as cholera in jail

Thirty-seven per cent of the total number of admissions to jails were for malarial fevers, returned usually as "ague," owing to the rigid rules of the "*Nomenclature of Disease*" In most jails nowadays care is taken to prevent primary malarial attacks, but relapses are less easy to prevent and are, we believe, the most frequent. The good effects of quinine administered as a "prophylactic" is commented upon

As regards "Remittent fever," it is noted that in some cases this term was wrongly used, but that "nearly all the cases so returned were malarial fever." It is probable that many such cases are restivo-autumnal infections, but as long as we are bound down to the present "*Nomenclature of Disease*" we are unable to return "malarial cases" by any other terms than "ague" or "remittent fever." We are glad to see that the Nagpur Malaria Convention has called the attention of the Royal College of Physicians to this point. It is, however, easier to find fault with the present nomenclature than to suggest an alternative one. To describe and return the malarial fevers according to the type or variety of parasite present would be the ideal method—but we need hardly say that such a course is impracticable in a fever season in India.

The term "simple continued fever" is one which ignorant persons have made much fun over in South Africa. Doubtless it does cover a multitude of diseases, but the contention that it is only an euphemistic phrase for "enteric" is all nonsense. Mild or abortive cases of enteric are doubtless sometimes so called, but most medical men are not ready to admit that the whole pathology of the fevers of India are summed up in the words 'malarial' and 'enteric'. Simple continued fever is correctly used to cover mild cases of fever due to fatigue, exposure, &c., and such cases in our opinion certainly exist, and we would prefer to see them called by this name rather than brand them as "ague," which is too commonly used in India, by medical subordinates especially, as a sort of scientific translation of the vernacular word for "fever." Some cases certainly, where the fever is purely symptomatic, of, say, orchitis, vaccinia, or even influenza are wrongly called "simple continued fever." The note shows that only 34 cases of enteric fever with 17 deaths were returned out of a total of some 47,000 cases of fever. The question of the extent of the prevalence of enteric among natives is one which has been of late much discussed in these columns, and the above 34 cases out of 47,000 shows that the disease cannot be a common one in the jails of India, *i.e.*, among the adult native peasantry. The recent cases have very often been diagnosed chiefly by means of the Widal test, and our belief in its prevalence nowadays must largely depend upon the amount of dependence which we put upon that test.

The Sanitary Commissioner's Note gives a good account of "cerebro-spinal fever," a fatal disease which has certainly to be reckoned with as one of the continued fevers of India. Much of what is stated in the note has already been referred to in previous issues of this *Gazette*.

Only 31 plague cases were met with in all the jails of India, and 19 of these were in the Common Prison, in Bombay. This is very creditable to the executive of the jails.

We note that much of the undoubted increase of cases of tubercle of lungs in jails is attributed to increased search for such. That it is largely a question of increased care in diagnosis we believe. It is mentioned that in Midnapur Central Jail, "the amount of tubercle was apparently increased during the incumbencies of two medical officers who took a personal interest in the detection of them." The question of over-crowding, however, is not lost sight of, and we are glad to see special tubercle wards recommended. We have frequently urged this point and believe that the open air treatment of tubercle can be successfully carried out in most jails.

We are entirely of the opinion that pneumonia in jails only becomes a dangerous, prevalent and fatal disease when the ventilation of the wards is defective. This is the opinion of the Inspector-General of N-W P & Oudh, and a recent experience of our own confirms it. In October last, in Alipore Central Jail, pneumonia was rapidly becoming epidemic, 15 cases, three fatal, in ten days. We were convinced that the spread and violence of the disease was due to the badly ventilated condition of certain barracks with four rows of prisoners. We visited the wards at midnight and found the atmosphere indescribable, and all the shutters of the windows closed. As natives of India will close shutters if they can we took means to render this impossible by taking every alternate pair of shutters off their hinges and removing them. The result was at once apparent. In spite of the approach of the cold weather, pneumonia at once disappeared, and has not returned. We have long believed that the fatal forms of pneumonia found in Indian jails and in the close and crowded lines of sepoys in frontier regiments are due not to cold but to foul air and bad ventilation which allows of the concentration of the germs of the disease.

Considerations of space forbid us further reference to the other diseases of jails treated in this note. The note is a valuable one, and will, we hope, be widely read by all medical officers concerned with the jail population of India.

LONDON LETTER

THE LATE SURGEON GENERAL ROBERT HARVEY

THE tidings of the death of the popular Director General of the Indian Medical Service were received with surprise and regret, the career thus suddenly and unexpectedly ended has been a busy, varied and creditable one. The end of it has its pathetic aspects, for it is an open secret that Harvey might have left India long ago and spent a life of ease and luxury in England, but ambition and a laudable desire for responsible occupation and such distinction as diligent and meritorious public service might win, kept him in harness. Death overtook him before he had obtained the full fruition of his aims. But those who knew him best will realise that the life which he deliberately elected was that which was most consonant with his inclination and energies, and that the death which overtook him while engaged in the fulfilment of important duties was probably the sort of death which he himself would have, if not sought, at any rate not spurned. One reads now and again of the demise at an advanced age of some Indian Medical Officer who has been in his day distinguished, and has held prominent position, or done good work, and in whose case the death of active and useful life has long preceded the dissolution of the body. This double death which is the lot of most members of all the public services is perhaps inevitable, but must also be a cause of pain and regret to its subject. It is not my purpose to write an obituary notice or panegyric, but having known Robert Harvey intimately throughout his service and been closely associated with him in various ways, I cannot refrain from giving expression to my appreciation of his excellent abilities, his unwearied diligence, his devotion to his profession, his attention to his patients, his resource and skill, and his kindly honourable disposition.

THE ROYAL ARMY MEDICAL CORPS

The first step in the reorganization of the Army Medical Service has been taken in the appointment of the Advisory Board, the members

of which were gazetted about a month ago. The selection of men to serve on the Board has met with approval, but very great uncertainty and not a little apprehension exist regarding the conversion of the scheme which was drawn up some time ago by the Secretary of State for War and submitted to a committee of experts into a royal warrant. This scheme has undergone very searching and outspoken criticism and met with very decided condemnation as regards the most of its provisions. In order to commend itself to the approval of the profession and render the service attractive to the sort of men whom it is sought to engage, the scheme must undergo very considerable if not radical modifications. The sitting of the Advisory Board to work as a first step in the new departure looks as if it were intended to entrust this body largely with the business of recasting the service. If so there is a reasonable hope that the feelings and interests of present incumbents, the opinions of the profession at large, as well as the public aspects of the matter, will obtain full and rational consideration. The sooner the present state of suspense is ended, the better. Nothing hinders the efficiency of a service so much as unrest and discontent. Officers already in the service know not what to expect, and young graduates and diplomates will hesitate to commit themselves to a career whose conditions are doubtful and prospects uncertain.

THE INVESTIGATION OF LEPROSY

Mr Johnathan Hutchinson is about to proceed to South Africa for the purpose of investigating leprosy. The field is for many reasons a most favourable one for a research of this kind, and Mr Hutchinson may be trusted to bring to bear upon it those powers of acute observation and shrewd thought which have been already exercised with such signal benefit in many directions. Unfortunately he has committed himself to a theory of leprosy causation which seems to have obtained dominion over all his working and writing on this subject. His view is that leprosy is originated by the consumption of dried and imperfectly salted fish which offers a suitable *nidus* for the cultivation and conveyance of the bacillus of the disease.

The hypothesis rests on pure speculation at present, and no reliable positive evidence has been adduced in support of it.

K McL

19th December 1901

Current Topics.

THE IDENTITY OF FILARIA NOCTURNA AND FILARIA DIURNA

THE connection between the embryo nematode, now called *filaria nocturna* by Manson, and various forms of lymphatic disease is unquestioned since its discovery by Denaiquay in 1863 in chylous fluid and in the blood by Timothy Lewis, A.M.D., in Calcutta in 1872. The most remarkable fact in the life history of this organism is its periodicity, that is, that it only appears at night, or rather as shown by Mackenzie, while its host is asleep. On account of this phenomenon Manson gave it the name *f. nocturna*, the more to distinguish it from other and similar blood filariae, especially the *f. diurna*.

It would appear, however, from the work done by the Nigeria Malaria Expedition (Memoir IV, p. 89) that there are so many points of resemblance between the embryos of the two worms, *nocturna* and *diurna*, that it is possible that after all they may be identical.

The evidence in favour of this somewhat revolutionary opinion may be here summarised from the Memoir above referred to. It is first pointed out that the geographical distribution, as far as is known, of the two embryos very largely corresponds. It is true that there are many lands in which *f. nocturna* has alone been described, but no land in which *f. diurna* exists without the presence also of *f. nocturna*. Moreover, there are some islands in the Pacific where elephantiasis is very prevalent, and an embryo occurs in the blood of many natives which very closely resembles *f. nocturna*, yet shows none of its (supposed) characteristic periodicity. The members of the Nigeria Expedition also record the fact that they

"were unable to distinguish the embryos in the blood of natives infected with *f. nocturna* and *f. diurna* by any means whatever. They appeared identical in their appearance, characters, measurements, and movements in fresh preparations, and correspond in length, breadth, staining reactions, and in the possession of the same number of 'spots,' situated at similar points along the length of the worm and of the same shape and size. The sheath, a common feature of each, appeared identical. Moreover the W. African *f. nocturna* resembles very closely that of China and India as described by Manson."

There is also a close similarity as regards the numbers found in peripheral blood.

"Again, Thorpe in the Tonga Islands, where a large percentage of the adults showed symptoms of elephantiasis, records an examination of a large number of natives which proved the presence of embryos in their blood both during the day and during the night in approximately equal numbers, and moreover he also showed that the embryos were present throughout the whole of the day."

The writers of the Nigeria Report have also shown that so-called 'pure' cases of *f. nocturna* and *f. diurna* were not so commonly found by them as "irregular" cases.

Thorpe, bearing in mind the classical experiments of Manson and Mackenzie proving a change of habits in the case of *f. nocturna*, explained the phenomenon of the appearance of these embryos during the day in the blood of inhabitants of the Tonga Islands by the native habits of sitting up much at night, feasting and talking and sleeping during the hot hours of the day.

Our authors have successfully cultivated the *f. nocturna* in several generations of mosquito of two genera, but have, on the other hand, failed to cultivate the *f. diurna*. This failure they explain as follows—

"If the *f. diurna* has been evolved in consequence of the habits of the natives, it is not unnatural to expect that its intermediary host is an insect, probably a mosquito, not essentially nocturnal in its habits such as *A. costalis*, but one whose habits are diurnal."

This is a weak point, in our opinion, of the view that the two embryos are identical, for already the *f. nocturna* has been traced in its life history in several mosquitos, both *Culex* and *Anopheles*.

Another point, however, is in favour of the identity theory. Our authors have described (in the Memoir) eleven new species of avian filariae, and each of these has a quite different embryo, and each species possesses a distinct adult form. But *f. nocturna* and *f. diurna* are indistinguishable in either fresh or stained specimens, and only one adult form is known, viz, *f. bancrofti*, the parent form of *f. nocturna*, hence it is probable that the *f. diurna* has the same adult form, none other being known, and hence that the two are identical.

As regards *f. loa* which has been surmised to be the adult form of *f. diurna*, it has certainly been found in the eye of persons whose blood contains *f. diurna*, but this is probably a mere coincidence, as *f. diurna* is common, and cases have occurred of *f. loa* in which no embryos could be found in the blood.

It may also be added that Manson attributes no special pathological effects to *f. diurna*, of course if this filaria is identical with *f. nocturna* this is easy to understand.

Our authors sum up the case as follows—

"Although the weight of evidence is on the side of the identity of *f. nocturna* and *f. diurna*, yet there are many points to be cleared up before the question can be settled. The *f. loa* has introduced a serious difficulty into the subject, and it appears to us that a solution of the mystery can only be obtained when the embryos in a pure case of *f. diurna* have been successfully and completely cultivated in this intermediary host—which is still to be discovered—to the final larvæ stage, and perhaps it may become necessary to perform experiments of infection of man by use of infected intermediary hosts before a complete solution is procured."

As bearing on the question of the existence of *f. diurna* in India, where it has not been described, and on the identity of it with *f. nocturna*, we may note that reference is made in the Annual Report of the General Hospital, Madras (p. 45), by Captain C. B. Harrison, M.B.,

IMS, to two "cases of filariasis, one with hæmaturia and the other with chyluria in which the filaria was seen throughout the 24 hours," irrespective of day or night (*I M G*, December, p 474) Further search for the filarina is therefore needed in India, and the above question of identity opens up a very profitable field of research

A MALARIA PROBLEM

THE Rome Correspondent of the *Lancet* (November 23rd, 1901) recently stated a problem which he regards as not possible of satisfactory solution with our present knowledge of the mosquito malaria theory

The case is given in detail by Celli and Casperini in a communication in the *Policlinico*. It is as follows—Certain localities in Tuscany, the swamps of Fucechio and Bientina, were less than 30 years ago, highly malarious, a fact testified, by old military maps, in which they are indicated as highly malarious, and by the statements of medical men who remember them as unhealthy. The physical conditions remain precisely as they were before, they consist of swamps, canals, rice-fields, hemp tanks, peat mosses exactly the same as in the now deadly and fever-stricken Maremma. The conditions therefore in these Tuscan marshes are the same as in the other places which are highly malarious, and in them the stagnant water swarms with anopheles larvae (clavigeri and pictus) and myriads of the adult flies. There is no want of malarial material, for the inhabitants go to other districts, contract malaria, suffer from relapses on their return. Every condition therefore for an extensive epidemic of malaria is apparently provided. In another locality such an outbreak would be inevitable, but in these favoured Tuscan marshes no such result follows. The children, elsewhere the surest indicators of malaria, are here robust and rosy, the adult population, though they may be unhealthy and squalid from the effects of pellagra, show no effects of malaria, and it is not uncommon to meet people who have lived their lives in this malarial-like spot, and who never have had a touch of fever. In one part a colony of women and children who watch night and day on the tomato crops and who live in huts giving no better protection than those of the Campagna, yet they nevertheless remain quite immune. This freedom cannot be due to any acquired immunity, for these people readily suffer from malarial fever when they go to malarious localities for work. It is not due to any want of susceptibility on the part of the local anopheles, for specimens captured there were readily infected by malarious blood in Rome. Nor is their exemption due to use of quinine, for that drug is used not more than in other places.

Celli and Casperini regard this case as an indisputable and so far inexplicable exception to the working of the mosquito theory.

The case is certainly an interesting one, and indicates that there are problems yet to be solved with regard to malaria.

The case recorded, however, is not absolutely unique. It is a fact which we too little understand that diseases wax and wane, *eg*, influenza and plague, have returned after long intervals to trouble us. Even as regards malaria, are there not examples in India of places formerly deadly which are now comparatively healthy? Take, for example the great epidemic, which was almost certainly chiefly malarial, which ravaged Burdwan, other Lower Bengal districts and the Mauritius some thirty years ago. These districts, though by no means free from malaria, are now comparatively healthy, in fact Burdwan is by no means as unhealthy as popular belief asserts. Or take *Kala azar* which literally ravaged parts of Assam up till a few years ago, it is now certainly dying out. No one can say that the local physical conditions are changed in these places, sanitary improvements or drainage schemes have been very few and far between, yet these districts are now healthy. The explanation of such cases is still unknown, but it is possible to speculate that such outbreaks were due (as L. Rogers has shown) to a succession of seasons of abnormal rainfall, which we must conceive as having been in such extent and degree as to afford the most favourable conditions for the breeding and growth of anopheles. Such favouring conditions must rarely coincide, and it is possible to conceive that in certain local areas similar conditions *unfavourable* to the growth of the anopheles may exist, though we know them not. Anopheles still exists in the fens of Lincolnshire, malarial cases must now and then be imported there, but we never heard of a spread of malaria. A dozen years ago Bihar was notorious for its malaria, now it is much less so.

The above speculations and facts show that there is still much to be explained before we can claim to understand the whole etiology and epidemiology of malaria.

CANCER AND MALARIA

A PARAGRAPH has recently been going round the medical press in which the blood of persons suffering from malarial infection is suggested as a remedy for cancer. This extraordinary proposal was made by no less an authority than the Prof. Loeffler of Griefswald, well-known as the discoverer of the diphtheria bacillus, and was published in a recent issue of the *Deutsche Medicinische Wochenschrift* (Oct 1901). Cancer patients, according to the method proposed by the eminent pathologist, are to be inoculated with blood taken from persons suffering from malaria. The professor strongly appeals to physicians of cancer hospitals to make the necessary experiments to test his theory. Prof. Loeffler apparently bases his proposal on the fact that malaria is a parasitic disease, and on the

theory that carcinoma may be due also to a parasite, and he lays stress on the supposed fact that "where malaria is prevalent cancer seldom or never occurs"

This, therefore, raises an important question which it is not at all easy to answer, *viz*, Is cancer a common disease of the tropics?

Long ago Mr Bland Sutton and others pointed out that cancer was rare among the coloured races. Norman Chevers concluded that it was "by no means remarkably prevalent in India," but at the same time gave a lot of facts and quotations indicating its occurrence among the natives of India. Later Capt Leonard Rogers, I.M.S., M.D., as a result of his analyses of the pathological records of the Medical College Hospital, Calcutta, gave his opinion (*J Trop Med*, June 1900) that "Malignant diseases not only occur among the natives of India, but they may be said to be common among them." He shows that out of 450 *post-mortems* malignant growths were found in 1 in 28 (3.5 per cent).

Our columns from time to time have published many cases of cancer, the prevalence of epithelioma in Kashmir is well known, and the published reports of the large Civil Hospitals in India by no means indicate that the disease is rare. Moreover, the records of the Calcutta Medical College and the Madras General Hospital (as recently shown in the *Lancet* by Lt-Col Maitland, I.M.S. and Capt Donovan, I.M.S.) prove that cancer is by no means rare in malarious localities.

It is, therefore, reasonable to conclude that whatever evidence Prof Loeffler may have in favour of his proposal for using malaria toxins as a remedy for cancer, it cannot be soundly based on any supposed absence of cancer among those who suffer largely from malaria.

METHODS OF DISINFECTION AGAINST MOSQUITOS

We have received Bulletin No 6 of the Hygienic Laboratory of the Marine Hospital Service, U.S.A., which is a record of a series of experiments on "disinfection against mosquitos with formaldehyde and sulphur dioxide," conducted by Dr M. J. Rosenau, Director of the Laboratory.

The report begins by pointing out that now that the importance of mosquitos and flies is understood, "it will be a greater reproach to the housewife to have mosquitos and flies in the home than bed-bugs, and it is the duty of sanitarians to spread an abhorrence for these most common and most dangerous of domestic pests."

In the experiments it was endeavoured to imitate the conditions found in actual practice. The mosquitos used were good specimens of *Culex pungens* raised in the laboratory, of from one to seven days old and both males and females. They were exposed in battery jars covered with gauze, and in pill boxes with gauze lids.

Four methods of evolving formaldehyde gas were used, *viz*—(1) the sheet method *i.e.*, hanging sheets sprayed with 40 per cent. formalin, this method, though strong enough to kill many spores and spore-bearing organisms (used as a control), had absolutely no effect upon the mosquitos. In another experiment the time of exposure was lengthened from 6 to 24 hours, and most of the mosquitos were found dead, except when they hid in folds of cloth, &c., "despite the fact that the gas penetrated to these places in sufficient strength to kill pyocyaneus and sometimes dry subtilis spores." We may, therefore, agree with the experimenter that this method is not practicable. (2) The Kulin lamp was no more successful. (3) The Tierner-Lee Formaldehyde Disinfectant was next tried, which depends upon the principle of generating the formaldehyde gas from its watery solution, plus 1 per cent of glycerine, by distillation from a retort without pressure. Here, again, though the gas was strong enough to kill most of the spore-bearing organisms, the mosquitos almost all escaped. (4) The next experiments were with the autoclave, which evolves the formaldehyde by heating formalin, mixed with a neutral salt in a retort under a pressure of at least 45 lb to the sq inch. Here, again, gas sufficient to destroy non spore-bearing bacteria under four layers of towel was impotent to destroy the mosquitos.

It is, therefore, concluded that "to destroy mosquitos hiding in an ordinary room we must use a concentration of the gas sufficient to kill a spore-bearing organism."

The next series of experiments deals with the use of sulphur dioxide as follows—2 lb flowers of sulphur were burned in a room of 500 c ft capacity, the time of exposure was four hours, all the mosquitos were killed. Even in a room of same capacity with one-third of the above amount of sulphur all the mosquitos were found dead.

Other experiments are detailed showing the value of sulphur as an insecticide, very dilute sulphur gases being sufficient.

The experiments, perhaps, do not tell us anything that one might not have guessed before, but they demonstrate the uselessness of the fashionable formaldehyde as an insecticide, and re-establish the value of sulphur burning for this purpose, though, of course, it is quite useless against disease germs. The value of this sulphur fumigation as a means of ridding a house or the hold of a ship of infected mosquitos is clear, and it will probably be largely used for disinfecting ships which have had cases of yellow fever on board.

A DIAGNOSTIC TABLE OF ULCERS

We have received a copy of a very useful table of Ulcers, compiled by Major K. Prasad,

IMS, Civil Surgeon of Shwabo, Burma, for the use of medical subordinates

In this table ulcers are divided into non-specific and specific, the first class include simple, oedematous or weak, callous or indolent, inflammatory, neuralgic or irritable, varicose, and eczematous. Under the term specific are described gouty, scorbutic, stiumous, perforating, lupoid, indolent, epitheliomatous and superficial and deep syphilitic ulcers. Each variety is then treated of under the following heads: base or surface, edges, cicatrization, discharge, surrounding parts, pain or other prominent symptom, locality and number, shape and size, age of patient, and treatment.

The description given under each heading is brief and accurate, and should be of value in assisting the medical subordinate to make a differential diagnosis, which is often of great importance as regards treatment. We note that no mention is made of that specific form of ulceration, which is best described under the name Oriental Sore, which a recent correspondence in our columns has shown to be closely akin to or identical with veldt sore.

A table of the diagnostic points of ulcers like this one might well be hung up in the dispensary of every hospital. We may add that it is obtainable at a nominal cost from the author at Shwabo, Burma.

At the suggestion of the Inspector-General of Civil Hospitals, Bengal, Major J T Calvert, MB, IMS, the Superintendent of the Cuttack Medical School, is bringing out a little book on worms, and worm diseases, for the use of medical subordinates.

A propos of the question just now being discussed in our columns as to the degree of the prevalence of typhoid fever in the natives of India, Lieutenant-Colonel F W Wright, IMS, DSO, sends us notes of a case which he diagnosed and proved *post mortem* to be enteric fever in a Hindu Sepoy of the Burma Military Police so long ago as December 1887. Clinically the case pointed to enteric, the patient died at about the end of the second week, and at the autopsy no less than 33 ulcers were found in Peyer's patches in the lower 11 feet of the small intestine. These ulcers are very carefully described in Lieutenant-Colonel Wright's note. The other organs showed nothing of special interest. The case is of value showing that by careful diagnosis and where a *post-mortem* examination was obtainable typhoid fever could certainly be found in natives of India even fifteen years ago.

CASES of cerebro-spinal fever have appeared in Rangoon recently, and, it is understood, have been traced to Calcutta, where the disease is practically endemic.

THE treatment of dysentery by sulphur has been mentioned by several writers recently in the home medical papers. It will be noticed that their views in its favour are based upon a comparatively small experience of the drug in this disease. We have for some time past been making a trial of this remedy, and cannot so far say that we have found it of any special value. In acute cases, so far, we have found it much slower in action than the sulphates of soda or magnesia. We have more hope of its being found of value in those troublesome cases of chronic dysentery, but it is too soon yet to draw any conclusions from a too limited experience.

We have used the powdered sulphur in twenty grain doses with five grains of Dover's powder, given in milk, three or four times a day. For chronic cases we have used half drachm doses thrice daily.

As for the use of *izal* in acute dysentery, we have a very poor opinion of it. In a series of cases we tried *izal* and that potent drug *aqua menth. pip.*, we found that one was quite as good as the other, and after giving both a fair trial in each case we had to give the salines, which very rapidly got rid of the affection.

THERE has recently been an epidemic of cerebro-spinal fever in Sydney and several other parts of South Australia. In the Prince Alfred Hospital (we learn from the *Australasian Medical Gazette*) much use has been made of lumbar puncture as an aid to diagnosis. The method is very useful as a means of differentiating cerebro-spinal fever (due to the *diplococcus intracellularis*) from tuberculous or from streptococcal meningitis due to ear trouble. It appears that in several cases temporary relief was given to the symptoms on the withdrawal of the fluid, and we understand that Major E Harold Brown, IMS, who has used this method of diagnosis largely at the Bhowanipuri Hospital, Calcutta, believes that in several cases a distinct good effect was produced on the course of the disease.

We understand that Captain E R Rost, IMS, has been successful with certain experiments on cancer in the laboratory of the General Hospital, Rangoon. We understand that he has managed to grow the organism on a solid medium, and that peritoneal injection of a culture of the parasite has caused a fatal carcinoma of the liver in a guinea-pig. The parasite in this case was taken from a cancer of the testis.

Reviews

Clinical Lectures on Stricture of the Urethra and Enlargement of the Prostate. By P J FRPYER, M.A., M.D., Lieut Colonel, IMS. (*Retd.*) Bailhère, Tindall and Cox, London, 1901.

THIS brochure is a republication in a handy form of lectures that appeared in the *Lancet* and

Clinical Journal Although not to be compared to Sir Henry Thompson's epoch-making work on urethral surgery, yet it serves admirably to present modern theory and practice up to date in a clear, crisp and condensed form. There are half a dozen lectures, and these contents are about equally divided between the urethra and the prostate. Attention is duly drawn to the sexual character of the male urethra and of the prostate, and it is satisfactory to find that Sir H. Thompson's dictum of urethral stricture being most common at the bulbo-membranous junction is upheld in opposition to the American view that penile strictures are more frequent than those in the deep urethra. This discrepancy, as the author points out, is due to the diverse aspects in which the matter is considered. American surgeons regard any contraction of the urethra, however slight, as a stricture, whereas British surgeons refer to the site of pronounced organic strictures which require instrumental or operative interference. Preference is rightly given to olive-tipped gum elastic bougies as the best form of instrument for urethral exploration, it being much simpler and safer than the urethrometer.

In discussing the subject of interrupted dilatation, the author points out that it is worse than futile to leave instruments *in situ* for a few minutes. This only produces spasm and irritation, so it is best to withdraw them gently and at once. He commences with olive bougies, gradually increasing the size, and finishes up with highly polished conical steel dilators until 15 or 16 of the English scale is reached, because No. 11 or 12 is not sufficient to bring the urethra up to the normal capacity.

Dr. Freyer explains the rationale of the method of interrupted dilatation as a double and simultaneous process of expansion and absorption of the morbid tissues involved. He seems to think that the principles involved in the cure of stricture by interrupted dilatation are well recognised in France, but "scarcely understood" in Great Britain! This seems rather an unwarrantable aspersion of his surgical colleagues and compatriots. Sir H. Thompson's *Clinical Lectures on Diseases of the Urinary Organs*, 7th Edition, published in 1883, show that the process was sufficiently understood by him and was initiated by that great surgeon.

The chapter on the operative treatment of stricture bears the impress of the practical surgeon. Divulsion and electrolysis are naturally relegated to the limbo of the past. We are glad to notice so much stress is laid on the practical utility of internal urethrotomy.

The author rightly discountenances the tying in of a catheter after internal urethrotomy. Such a procedure merely causes irritation and suppuration in the wound, and defeats the primary object of union by first intention. Healing by granulation inevitably leads to subsequent

contraction. He also wisely sets his face against the practice of passing instruments at intervals of two or three days, which is so often done after the third or fourth day subsequent to the urethral section. Such a practice also causes irritation, induces exudation of plastic lymph, and defeats primary union.

The result of these sound precautions is that Dr. Freyer can confidently contradict the old axiom so commonly accepted without question—"Once a stricture, always a stricture." In his own practice he can show absolute cures many years after the operation.

After describing the methods of Wheelhouse and Syme for performing external urethrotomy, Dr. Freyer goes on to describe his own operation. This involves the use of a flexible filiform guide, a series of steel dilators, a special grooved staff and a gorget.

The latter portion of the book is devoted to enlargement of the prostate, its pathology, symptomatology and treatment. It is disappointing in that the writer ignores, almost ostentatiously, the good work done in this special subject by various well-known surgeons. The defect is probably the result of a desire for conciseness and practical directness, and also is due to limitations of time and space in a brief course of post-graduate lectures. Dr. Freyer draws attention to the fact that enlargement of the prostate frequently occurs among the natives of India fully ten years earlier than what is considered the average age for prostatic enlargement in Europeans.

But then, as he points out, the expectation of life in Orientals is also about ten years less. The theories of Guyon and Velpeau concerning the etiology of prostatic enlargement are duly detailed and discussed, and the reader is left to form his own conclusions—a wise procedure in a matter which is so eminently debatable from lack of precise information.

Dr. Freyer is very emphatic, and rightly so, in teaching that most cases of enlarged prostate merely require cleanly catheterism and careful hygiene, and that operative measures are only advisable for a small minority, and only for a few selected cases of this category. Trioxymethylene is recommended for the sterilizing of gum-elastic catheters. The powder is kept in the same receptacle as the catheters, and formal vapour is given off, which renders the instruments aseptic.

The author speaks highly of enucleation of prostatic growths by suprapubic prostatectomy. He considers it the most valuable of the radical procedures, as the most commonly applicable, and as yielding the best results. Lastly, he describes his own special method of perineal prostatectomy. He first makes a perineal urethrotomy, then an extensive crescentic incision back to the coccyx, going deep into one ischio-rectal fossa. The capsule of the prostate is

exposed and opened, and the redundant portion of prostate is removed piecemeal. Finally, perineal drainage by a soft rubber tube is carried out very thoroughly, the large wound packed with iodoform gauze. The palliative operations of castration and vasectomy receive due attention. From personal observations on a number of eunuchs in India the author is able to state confidently that in one and all the prostate was rudimentary. This confirms the experiments made on dogs and other animals. Dr Freyer considers castration far more effective than vasectomy, but its drawbacks are manifold. There is a high mortality in people of advanced age, and mental disturbance is far from uncommon.

In advanced stages of certain prostatic cases mere drainage of the bladder is all that can be attempted, perineal drainage being much less serious than suprapubic drainage.

The Report of the Liverpool Malaria Expedition to Nigeria, Memoirs III and IV

THE energy and enterprise of the Liverpool School of Tropical Medicine are well shown by the series of admirable reports on tropical disease which it has issued.

The present two volumes, called memoirs III and IV, are reports of the work done by the members of the recent expedition to Nigeria, viz., Dr F E Annett, Dr J Everett Dutton, and Dr J H Elliott. The report appears in the form of two memoirs, the first deals more especially with malarial fever, and the second with filariasis.

In the first report the authors describe conditions favouring malaria in the neighbourhood of old Calabar. There is nothing very new in the account given of the habits of anopheles, but it is pointed out that many breeding places exist in the neighbourhood of the houses of Europeans, even the cups of water (placed to make the piles on which the houses were built "ant-proof") were favourite breeding spots. *Anopheles funestus* and *A. costalis* were the most common species of that genus, and many types and stages of the parasites were found. It is also noted that 'gametes' are very rare in the blood of Europeans in West Africa. The authors confirm the observations of Koch, and of Stephens and Christophers as to the enormous extent to which children are infected with the parasites, viz., from 22 to 66 per cent, especially children under five years of age.

At the time of their visit the members of the expedition found chiefly æstivo-autumnal parasites but also a number of quartans and only a few tertians, in the latter respect they do not agree with Drs Stephens and Christophers who stated that quartans and tertians do not exist in West Africa, nor did the latter observers find any crescents.

Apparently the Europeans also, though they suffer much from malarial fever, seldom show

parasites in their peripheral blood. This is ascribed to their taking quinine, and Dr Hanley of Opopo took smears of the blood of all Europeans available in his district and out of nineteen cases the blood examination gave negative results in no less than sixteen, and in one case with a much enlarged spleen the examination of the blood was negative, though the hæmoglobin was only from 30 to 20 per cent.

In the chapter on what it is now the fashion to call the "bionomics" of anopheles, in plain English the "life habits," it is noted that the "distance which is traversed by a mosquito is never very great and extremely rarely reaches so much as half a mile, and their breeding places are always within a short distance of some dwelling." This habit is probably connected with the fact that *the insects need blood for the propagation of their species*, as is proved by many experiments recorded here.

We may now pass on to the chapter on the prevention of malarial fevers. We find however that the recommendations of this expedition are absolutely identical with those of Stephens and Christophers, and that is *the segregation of Europeans at a distance of not less than half a mile from the huts of natives*. The other means, which we have often discussed, are pointed out, and the language used with regard to the possibility of other methods is such as might be used by the most "fold your hands and look on" critics of the mosquito malaria theory, *eg*, Koch's scheme for cinchonising the whole community is condemned naturally as "absolutely impracticable," even "Europeans on the coast cannot be prevailed upon to use quinine regularly and intelligently." Koch's "intelligent and obedient community" seems only to exist in the realms ruled over by the Kaiser. We may note however and protest against the author's opinion, founded, it may be, on a too brief experience of tropical life, that doses of fifteen grains of quinine may be deleterious when taken in apparent health. This is quite absurd, and only applies to very rare cases of idiosyncrasy. We have within the past half year given fifteen-grain doses twice a week to 1,300 natives for four months together without a single bad symptom beyond a passing buzzing of the ears.

As regards the other methods of prevention—the biting of anopheles—we may agree that "fumigation is more likely to expel the European than the mosquito," yet it is not a bad plan to lessen their number to have some smoky "incense" burned in a room about sunset, the wind of the punka soon drives away the smell, and it has certainly seemed to lessen the number of mosquitos. Needless to say that our authors writing in the damp hot climate of West Africa, where every breath of wind is precious, would have nothing to do with the mosquito-proof houses which seemed so possible to those who tried them in Italy. Such precau-

tions must be put on the same level as the ridiculous recommendations to wear thick cord riding breeches and putties to avoid being bitten by mosquitos. Such a recommendation could only be penned in a London study on a chilly autumn afternoon.

Our authors have much to say about the destruction of the larvae and the mosquitos, chiefly by means of filling up holes and puddles and improved drainage, and only to a slight extent by culicicides, the "general use" of which is recognised as "impracticable." As to "segregation" it is pointed out that it only means keeping native huts and consequently native children at a distance of about half a mile. This and good surface drainage will do much to lessen the prevalence among Europeans of the malarial fevers.

The second volume of the Nigeria report, Memoir IV, is in reality not a report, but a very valuable and exhaustive monograph on the subject of filariasis, and as such we strongly recommend it to all our readers interested in this subject. The monograph is in fact a treatise on the nemathelminthes, the order to which the genus *filaria* belongs. Much of this part of the volume is borrowed from Hooper and Shipley's volume on *Worms, &c.*, in the *Cambridge Natural History Series*. The following filariae are described anatomically—*f. bancrofti* (sanguinis hominis, Lewis), *f. diurna*, *f. peistanis*, *f. ozzaidi*, *f. magalhessi*, *f. demarquani*, *f. lon*, *f. medinensis*, *f. lentis*, *f. inermis*, *f. volvulus*, *f. labialis*, *f. hominis oris*, *f. lymphatica*, *f. testiformis*, *f. equina*, *f. labiato-papillosa*, *f. hæmorrhagica*, *f. unmitis*, *f. recondita*, *f. irritans*, *f. evansi* (found in a camel in Madras), *f. lachrymalis*, *f. palpebralis*, *f. osleri*, *f. clava*, *f. mazzaudi*, *f. uncinata*, *f. piæ medæ*, and *f. corvi torquatus*. In addition to the above the following avian filariae are described—*f. cypseli*, *f. spiralis avium*, *f. fusiformis avium*, *f. spiralis avium major*, *f. falciformis*, *f. bibulosa*, *f. capsulata*, *f. shekletoni*, *f. serpentiformis*, *f. opobensis*, *f. calabarensis*, and *f. phœnicopteri*.

Perhaps, however, the most interesting portion of the report is the section on the question of the identity of the *f. nocturna* and *f. diurna* which we give in another column (p. 64 above).

This volume concludes with a valuable note on the mosquitos of West Africa by Mr. F. V. Theobald, F.R.S., which runs to 15 pages. The whole volume is admirably illustrated, those of the parts of a mosquito being exceptionally good—in all there are 23 plates, many plates containing several microphotographs, all beautifully executed. In conclusion, we can strongly recommend all our readers interested in these subjects to possess themselves of these monographs. That on the filaria is the most complete that we have seen. A very full bibliography ends the volume.

The Principles and Practice of Medicine

By WM OSLER, of Johns Hopkins University
Fourth Edition, pp 1182 Price, 18s net London
and Edinburgh 1901 YOUNG J PENTLAND

OSLER'S Practice of Medicine has long been a great favourite with practitioners and students of medicine. The present edition, the fourth, will, we believe, be equally popular and satisfactory. It is now the custom for books of this kind to be written by many authors, the plan has its advantages inasmuch as it is given to few authors to be equally well acquainted with all parts of such a vast subject as medicine has now become. On the other hand, such systems are apt to be unequal, and in some respects often lack the authority of a book written wholly by one author. Of such single author volumes we know of none to surpass or even equal that of Professor Osler. The present edition contains many important changes, the article on typhoid fever, in every respect admirable, has been in great part rewritten, and contains the cream of the studies on typhoid which have come from the Baltimore University of Johns Hopkins in recent years. The subject of malaria has been recast and much additional matter added to keep pace with the recent rapid advances in our knowledge of mosquito-malaria, especially from the point of view of etiology and prophylaxis. A short account is given of the part played by anopheles, and the rules for prophylaxis are based upon the life history of that fly. The clinical account of malaria is very good, and we note with pleasure that Dr Osler gives no countenance to the list of occult malarial affections such as neuralgia, paludal hepatitis and paludal pneumonia. He says that if the practitioner will take to heart the lesson that an intermittent fever which resists quinine is *not* malarial he will avoid many errors in diagnosis. As regards the "whole series of minor ailments attributed to the occult effects of paludism," Osler writes that the more closely such cases are investigated, the less definite appears the connection with malaria. We are glad to see that our author advocates large doses of quinine. In pernicious cases of æstivo-autumnal fever he advises 30 grains *hypodermically* every two or three hours. If after an accurate diagnosis of malaria is made large doses of quinine were used, one would hear less of malarial cachexia, and make much more complete "cures" of our patients. Much of the disrepute that quinine has among Native practitioners in India is due to their using it in cases which are not malarial and to using it in too small doses in the really malarial cases. Here as often in medicine successful treatment depends upon accurate diagnosis.

The chapter on dysentery is very good, indeed the best we have read for a long time. To show how up to date it is we may mention that it gives a full account of Shiga and Flexner's researches and under the head 'treatment' quotes the

present writer's experiences of the successful use of the sulphate of soda, which was only published last year. We note that he refers to joint affections in some epidemics of dysentery, a point omitted by most British authors. He divides dysenteries as follows: (1) acute specific dysentery due probably to Shiga and Flexner's bacillus, (2) amebic dysentery, acute and chronic, (3) acute catarrhal dysentery (acute ileocolitis), and (4) diphtheritic dysentery. The acute catarrhal form he describes as that met with in temperate climates and in children. The diphtheritic dysentery described here occurs in two forms, (1) primary and acute, with thick stiffened infiltrated mucosa, and (2) secondary, as a "terminal event in many acute and chronic diseases." This is the terminal dysentery described by the present reviewer as a final state in many chronic tropical complaints (see discussion in *British Medical Journal* of September 9th 1899). The chapter on beri-beri is short, but gives a clear account of the disease. Four forms are described as clinically met, viz (1) incomplete, (2) atrophic, (3) wet, (4) pernicious or cardiac. The chapter devoted to plague is short but satisfactory. The recent researches of the Liverpool and the American Yellow Fever Commissions are referred to in the account of that disease.

The chapter on animal parasites is good, and full notice is taken of the work done in India by Giles, Dobson, L. Rogers, S. P. James, &c. On the whole, we have no hesitation in saying that all the tropical diseases are well described. Among other subjects we have been particularly struck with the excellent chapters on pneumonia, appendicitis, and cerebro-spinal fever. Pneumonia finds its proper place among the acute infectious diseases, and is very ably described. The account given of cerebro-spinal fever is quite the best we have read in any text-book, the writer very properly points out that the "concentration of individuals" is a special factor in its causation and prevalence, as indeed the unhappy experience of the crowded Central Jail at Bhagalpur during the past year is a proof.

There are many other chapters in this altogether admirable volume on which we have not space to linger. We can with confidence recommend the book as the best single volume *Practice of Medicine in the English language*.

The Criminal. By HAVELOCK ELLIS. Third Edition, 1901. Contemporary Science Series (W. Scott & Co, London).

THIS is the third edition, revised and enlarged of a volume which attracted considerable attention and gave rise to much discussion when first published some ten years ago. At the time the first edition was published the subject of criminal anthropology was practically unknown in England, and has only begun to be studied in Italy, France and Belgium.

The subject of criminal anthropology is generally associated in the minds of the public with

the name of Lombroso, and as Mr Havelock Ellis says, "It has been the good fortune, and to some extent the bad fortune, of criminal anthropology that its chief protagonist (Lombroso) before the world has been a man whose personal energy, extraordinary wealth of ideas, and marvellous power of opening new lines of research at one time led a branch of science to be unduly identified with a personality. There is no school of criminal anthropology, as some have vainly imagined." Within recent years much has been written on this subject, the most important works being Ferri's great monograph *L'Omicidio* and the concluding volumes of Lombroso's *L'Uomo Delinquente*. Medical readers who do not understand Italian will find a complete résumé of Lombroso's views in his article in the XII Volume of the *Twentieth Century Practice of Medicine*, and reviews of various aspects of the subject in the four volumes published by Mr Fisher Unwin under the Editorship of Dr Morrison.

The great question which a criminal anthropologist has to answer is this, what is a criminal? Is he, according to the old legal assumption on which our criminal law is still mainly built up, a normal person who has wilfully committed an abnormal act? Is he the victim of acquired disease, such as some form of epilepsy? Is he an atavistic reappearance of the savage in modern society? Is he a "degenerate?" The answers to these and other such questions will be found in the book under review, answers given with all the caution demanded by the existence of conflicting views and the imperfection of our knowledge. Dr. Havelock Ellis is much impressed with the evidence which tends to show a real *relationship* (not identity) between a very large and characteristic group of criminals and those congenitally abnormal groups which we term imbecile and feeble-minded. Time and further examination of the facts have only served (he writes) to deepen his conviction as to the real nature of that relationship. "The criminal, it seems to me, in some of his most characteristic manifestations, is a congenitally weak-minded person whose abnormality, while by no means leaving the mental aptitudes absolutely unimpaired, chiefly affects the feelings and volition, so influencing conduct and rendering him an anti-social element in society." The criminal is, in the majority of cases, certainly not insane, but neither is he normal, and while not wholly insensible to the motives which influence the normal man, he is not affected by them in the same degree as the normal man. He is endowed with an ill-adjusted organism which fails to respond to the same social stimuli as the organisms by which he is surrounded. Hence we can easily understand how it is that our prisons are failures in that they fail to reform. This "reformatory" idea, however, is an obsolete one, and only exists in the mind of unthinking men of the world and in the

beliefs of various philanthropic and religious organisations

It has been proved a thousand times that the genuine criminal is never reformed, in fact nowadays practical men have ceased to look upon prison life as being either reformatory or deterrent. Prisons are simply places where the prisoner is suspended from habits of crime. However, so long as the present judicial system of fixed sentences is in vogue, the prisoner is not even for long suspended, this system being due to the legal mind taking cognizance only of the crime, and not of the person who commits it.

We must now indicate more clearly the contents of the volume before us. Chapters III and VI are the most important in the book, and deal with the most debatable subject, not that there is any question as to the facts, but rather as regards their significance.

The cranial and cerebral characteristics of the instinctive criminal are described, his face, the anomalies of his face, his physiognomy, his body and viscera, motor, activity and physical sensibility, the next chapter deals with his psychological characters, his moral insensibility, his intelligence, his vanity, and emotional instability. Then follow interesting chapters on religion, slang, tattooing, prison inscriptions, criminal literature, art and philosophy. The morbid vanity, the literary intelligence and the sensuality of the instinctive criminal are well illustrated in the lives of three well-known literary degenerates, Wainwright, Verlaine and Oscar Wilde.

The volume concludes with interesting chapters on the results of criminal anthropology, and the treatment of the criminal. The appendix contains 28 pictures of typical criminals and has a discussion on criminality in children and on the New York Prison, Elmira.

The book in its present form is a valuable and interesting study, which we can strongly recommend to all interested in social subjects. It is ten years nearly now since we studied the first edition of this book, and the lessons there learnt, have, we believe, much aided us in our dealings with criminals ever since. It has enabled us to understand better and to deal more satisfactorily with the habitual criminals of our Indian prisons. The law takes only cognizance of the crime, it is, we think, the duty of the Superintendent or the Medical Officer of the prison to try to understand the criminal. The material in our Indian prisons is ample, and even the biological and anatomical peculiarities or abnormalities described in this book will be found to be very largely present among the habituals of any Indian prison, and afford an interesting study to the medical man.

Official Year Book of the Scientific and Learned Societies of Great Britain and Ireland. London, 1901. Charles Griffin & Co., Ltd.

THIS well-known annual is the eighteenth issue, and during this period it has earned the reputa-

tion of being an accurate and concise review of the history, organisation and conditions of membership of the various scientific and learned Societies of Great Britain and Ireland. It is compiled from data furnished by the societies themselves, and each year chronicles the work done by each society, giving the title of every paper read or published with the name of the authors.

In accordance with suggestions made by the Royal Society and others, the publishers have arranged that the publication of this annual shall correspond as closely as possible with the *sessional* year (September to June) rather than the *calendar* year. Henceforth therefore the annual volume will appear as soon after June as possible, and the present volume comprises lists of all papers read at the various societies during the eighteen months from January 1900 to June 1901. It is an invaluable index to British scientific literature.

Lessons in Massage. By MARGARET D. PALMER. London, 1901. Baillière, Tindall & Cox.

MASSAGE is a subject full of interest for medical men practising in India, where a good deal more is known about its advantages and its methods than the author of this book would, perhaps, be willing to allow of men who are lamentably ignorant of the anatomy of the human body.

What deals with massage proper in the book consists of the lectures delivered to the author's pupils at the London Hospital, her experience at which institution qualifies her to speak with authority. In the published work she has added what she considers indispensable of elementary anatomy and physiology for the intelligent execution of her duties by the trained masseuse. That some knowledge of this sort is absolutely necessary, no one would dispute, but we venture to doubt whether the study of the plates and tables given in this book would greatly forward the students' knowledge of anatomy unless the facts detailed were verified in the dissecting room.

For that portion of the book that deals with the methods and practice of massage we have nothing but praise, though we should have preferred to see good English used in the place of such terms as "*effleurage*" and "*petrissage*" and others of that ilk that savour of the charlatan. The detailed instruction given as to the methods of dealing with special ailments are particularly useful. Here we would specially draw attention to that part which deals with curvatures of the spine.

The numerous illustrations of the book are throughout excellent and helpful, and the publishers are to be congratulated on the way in which they have brought out a book that cannot help being useful to a large and growing class of practitioners of massage as well as to the medical profession in general whose acquaintance with the subject might well be more intimate. The book in its present form will, perhaps, be more intelligible to the latter class than to the former.

The Treatment of Disease by Climate

By RAM NARAIN, LMS Delhi B M NARAIN & Co, 1901

THIS little book by Dr Ram Narain on the treatment of disease by climate contains a large amount of information about many Indian Hill sanatoria as well as many European health resorts. It is very clearly and simply written, and the author has made good use of the works of many writers on the climatic treatment of disease. It is somewhat remarkable that, except the well-known work of Macnamara and an occasional lecture by Sir Joseph Fayrer, little or nothing has been written as regards the therapeutic value of the now numerous hill stations in India. Dr Ram Narain gives an account of all these hill stations, and points out clearly what class of case is best suited to each particular hill station, as well as the contraindications in each case. We have read the book with much interest and congratulate Dr Ram Narain on having produced a readable little volume on a subject too much neglected by writers on diseases of India. We are glad to see that the author advocates the establishment of a sanitarium for the open air treatment of phthisis in India.

The Practitioner's Clinical Referee.

By K. M. NADKARNI, F.S.S. Madras N K RAO & Co, 1901

THIS is a little book on the same lines as the many clinical manuals which have been published of recent years. It is published at the request of students, as a companion to the *Essentials of Modern Treatment of Disease* by the same author. We are glad to welcome books which bring home to the Indian student the paramount importance and interest of *diagnosis* as opposed to treatment. In our experience of Indian graduates we have found diagnosis to be their weak point, whereas a wealth of therapeutic resource is always at their disposal.

There is an extraordinary amount of information in the present volume. Nearly 300 pages consist of tables of baths, respiratory sounds, fevers, epidemic diseases, heart murmurs, reflexes, râles, eponymic signs, tumours, analysis, &c., all arranged in parallel columns in amazing abundance. Part II in some respects the most important part of the book is strangely classed as an appendix. On the whole, the book is a good example of its class and should prove useful to students preparing for examinations, and the numerous tables given in the book will often be useful for reference by practitioners.

Current Literature.**SPECIAL SENSES**

Heredity and Disease—In one of a series of interesting articles on this subject contributed to the *Australian Medical Gazette*, Dr Flynn, of Sydney,

discusses the influence of heredity as a factor in the history and etiology of diseases of the eye. Congenital colour-blindness is well known to be hereditary through the mother who is often exempt, 4 per cent of European males and $\frac{1}{2}$ per cent of females are colour-blind. Occasionally women suffer more however, as in quakers among whom Daltonism is said to prevail among the women to the extent of $\frac{5}{8}$ per cent. Retinitis pigmentosa spreads laterally, but does not descend vertically in a family. In this and other features it bears a striking parallel to Kaposi's disease. What one is for the skin the other is for the eye. In discussing the heredity of myopia, Dr Flynn excludes short sightedness due to disease of the tunics of the eyeball, though these diseases may be inherited of course. Many myopes again have acquired the disease for themselves by continually looking at near objects during the period of growth. He confines his remarks to those forms of myopia by far the most numerous, which represent a particular type of eye, somewhat analogous to stature above the average. These forms run in families. In them more members are myopic than can be accounted for by mere chance distribution. The nature of the hereditary predisposition is not known. A dolichocephalic skull with its greater depth of orbits has been supposed to be conducive to myopia. Babies, as a rule, are hypermetropic, as are the eyes of nearly all the higher mammalia. Statistics connecting myopia with literary work are misleading. Although the number of myopes found increases in passing from the lower to the higher schools and from lower to higher classes in the same school, it must be remembered that the age of the pupils increases as we pass from lower to higher schools and that myopia progresses with the age of the individual altogether independently of school life. Myopia may influence persons so affected in choosing a literary calling, so that the undue proportion of myopes among such people may be brought about in that way, and not be the result of literary work causing myopia. Savages are rarely myopic, but the frequency of myopia varies considerably in countries equally civilised. Thus, it is much greater in Germany than in England. That this disparity is not due to the different environment of school life in the two countries is shown by the fact that in America, where the conditions of school life are the same, a similar difference is found in the percentage of myopes among children of British and German parentage. In Australia peopled almost exclusively by those of British extraction, the same small percentage of myopes is observed as in those of British parentage elsewhere. Yet those who have given special attention to the subject are satisfied that there exists a 'concomitant variation' between the number of myopes in a community and the length of time that country has been civilised. In savage communities where so much depends on the possession of good distant vision, the ordinary laws of natural selection will either eliminate the myopic eye, or at least prevent its perpetuation. On the other hand, in the struggle for existence in civilised life, myopia does not prevent anyone from earning a living. There is, accordingly, a cessation of the controlling influence of natural selection. Rigid selection of individuals with good distant vision ceases, variations of the eyes are favoured heredity transmits these variations, and therefore the longer this favouring process has existed in a community, the greater will be the number of myopes. Myopia among civilised nations may therefore be said to depend on two factors, (a) on *panmixia*, or the cessation of the controlling influence of natural selection, favouring natural variations of the eye, and (b) on individual production by reading at short distance. The latter, acquired myopia, is not transmitted, it dies with the individual. The former representing a particular type of eye, due to intrinsic variations, is transmitted, and prevails in a particular community, not according to its present intellectual advancement, but according to the length of time it has been civilised.

Hypermetropia was regarded as hereditary by Donders. Astigmatism more certainly is. Even the position of the axes has been found to be inherited. Cataract is not uncommonly hereditary. Bowman stated that opacity of the lens is commonly observed in persons whose parents have been similarly affected, and often at an earlier age in the children than in the parents. The abstractor formed a family history of cataract in 25 per cent of the 66 cases in which he made enquiries, though unfortunately no note was made as to the ages of the relations affected. Optic atrophy sometimes attacks several members of a family and through several generations. The tendency to glaucoma is found in families and in races. Jews show 4 per cent affected compared with one per cent in other races. Congenital anomalies of every part of the eye are notoriously hereditary.

Treatment of Hemeralopia by liver—Trine (*L'encelmeur*, 1900, No 42, p 737) has had abundant opportunity to study this condition at the province of Simbersk, where it is of yearly occurrence. Out of 634 soldiers of the regiment stationed there 58 were affected. The cause did not seem to be due to malnutrition, as the ration was sufficient. Rapid improvement was noticed after the absorption of from 40 to 60 gm of cod liver oil, not enough to materially modify the nutrition or fat formation. None of the patients had scurvy, but malaria was associated with it in five instances. The greater number were in perfect health, five only being somewhat anemic. All affected were hypermetropes, consequently the writer finds it a predisposing factor and considers it a sort of accommodative and retinal asthenopia. Spring time and bright sunlight rather favoured an outbreak. The treatment consisted in the administration of liver both internally and externally. The patients were subjected to a smoking process by being exposed to the vapors arising from boiled liver, and each received 125 to 250 gm of boiled beef liver internally. The improvement was rapid—(*Boston Medical and Surgical Journal*, October 1901)

F P MAYNARD, F.R.C.S.

THE MALARIA CONVENTION AT NAGPORE

(From our own Correspondent)

This meeting, which is likely to prove a landmark in the history of the campaign against malaria in India, had its origin in a proposal of Colonel Scott Reid that the Civil Surgeons of the Central Provinces should spend a short time in practical work on malaria during the visit of the Royal Society's Commission to Nagpore, the Government of India subsequently arranging for the deputation of one or two medical officers from each province to attend for the purpose of discussing practical measures against malaria for adoption in India. The laboratory of the Central Jail, where the researches which form the basis of Major A. Buchanan's recent book on Indian Malarial Fevers were carried on by that officer, afforded a very good place for the work, a large camp being pitched in the compound outside the jail. In addition to most of the Civil Surgeons of the Central Provinces, headed by Colonel McKay, I.M.S., and the members of the Royal Society's Malaria Commission the following delegates were sent from by different local Governments: Major Grant from Madras, Captain Heard from the Punjab, Rogers from Bengal, Birdwood from the North West Provinces, and Jackson Lamb and Liston from Bombay, together with Dr Powell and Mr Aitken and some others. The proceedings began on December 30th, the first three days being occupied with laboratory work, demonstrations being given on making and staining blood films, the different forms of the malarial parasites, and on the recognition and dissection of mosquitoes, in which work Drs Christophers and

Stephens, Major Buchanan, and Captains Lamb, James and Liston gave assistance.

The discussions commenced on Thursday, January 2nd, when all the delegates had arrived, the proceedings being opened by a public meeting, at which Colonel Scott Reid gave a most interesting and instructive address tracing the progress of knowledge on the subject of malaria from the days when "blue mists" were considered to be the most important etiological factor through the discoveries of Laveran, Golgi and the other Italian observers to the epoch making work of Ross, and describing in simple language the fairy like story of the passage through the mosquito of the malarial parasite. Major Buchanan then gave a popular lecture illustrated by lantern slides on the different varieties of malarial parasites and temperature charts, which was much appreciated, and the proceedings were terminated by a most appropriate speech by the Chief Commissioner, Mr Fraser.

On the following morning the scientific work of the convention was begun with a paper by Drs Stephens and Christophers entitled "Malaria without Parasites in the Peripheral Blood," which was read by the first named, mainly based on work already published in the Proceedings of the Royal Society. Cases in which repeated examinations of the blood before quinine had been administered showed very few or no malarial parasites, although they exactly resembled other undoubted malarial cases were quoted, but in which a great increase of the large mononuclear white corpuscles was present most markedly during the remissions of the fever, and which blood change both the authors and some other authorities consider to be pathognomonic of malaria. If such cases are early treated with quinine, no parasites may ever be found in the peripheral circulation although they are certainly malarial. Reference was also made to the very frequent negative result of a search for malarial parasites in cases of chronic fevers accompanied by large spleens in Calcutta hospitals, and the question as to what is the nature of these cases was raised. A very interesting discussion followed in which Major Grant, Dr Powell, Captain Rogers and others took part. Instances of the absence of parasites in undoubted cases of malaria before quinine had been given were quoted confirming the results of the authors, but the debate mainly turned on the cases with enlarged spleens, which every speaker declared to be undoubtedly malarial and to follow and insensibly shade into the acute class of cases, instances being referred to in which frequent examinations of the blood had been made in cases of several months' duration and the parasites occasionally found up to the last stage, even though they may have been absent for considerable periods of the so called secondary fever.

The subject of the nomenclature of malarial fevers was then brought forward by Majors Grant and Roberts, and a proposal that the term chronic malaria or malarial cachexia should be restored to in the official nomenclature, and that the term malarial remittent should be omitted was submitted, and at a subsequent meeting was adopted after some debate. A paper entitled "Species" was read by Mr Aitken of Bombay in which the importance of caution in naming new species was illustrated by reference to variation in butterflies.

The afternoon sitting was opened by a paper on "The Diagnostic value of the Blood changes, and especially of the differential Leucocyte count in Continued and Remittent Fevers" by Captain Leonard Rogers. It was based on some fifty cases in which careful blood examinations had been made together with serum tests with the result that typhoid fever was found to be very common among natives of all classes in Calcutta. Further, the leucocyte count was considered to be of great value in the differentiation of enteric and malarial remittents, the increase in the lymphocytes in the former and of the large mononuclears in the latter, especially during the remissions being the most important points noted. A very interesting discussion ensued, in which Major Grant, Dr Christophers, Captain Lamb and

others took part, and the first named submitted some resolutions affirming the frequency and importance of the recognition of enteric (typhoid) in natives, which were adopted at the final meeting.

The first day's debates were concluded with a paper on "A Basis for the Classification of Indian Anopheles" by Captain Glen Liston, in which a new method of division by the marks on the antennae was brought forward, which was in close agreement with the habits of the different classes and appears to be a most simple and scientific arrangement. The fallacies of the usual division by means of the wings was also demonstrated.

The second day's discussion was opened by a paper on "Practical Measures for the Prevention of Malaria in India" by Captain Birdwood and Major J. R. Roberts. The latter narrated the measures adopted by him in Indore, while the former discussed the principles of action and submitted for consideration schemes for the prevention of malaria in private compounds, cantonments and municipalities respectively. This debate, which was the most practical business of the Convention, was well sustained and lasted into the afternoon meeting. The main principles of action were fully discussed, and eventually a strong committee composed of a delegate from each province together with two of the members of the Malaria Commission, with an experienced Civil Surgeon, Colonel McKay, as President, was formed to consider and amend the schemes submitted together with the suggestions of different members of the meeting. Two days were occupied with their meetings, and eventually a full plan of campaign was drawn up, which, it is hoped, may prove of material service in India.

The next paper on "The Relation of Anopheles to Malarial Endemicity" by Drs. Stephens and Christophers was read by the last named. The important question was raised as to whether the variable incidence of malaria in different areas might possibly depend on the presence of different varieties of anopheles, some of which only were capable of carrying malaria, and it was suggested that the want of correspondence between the seasonal distribution of Anopheles and malarial fevers in Calcutta recently pointed out by Rogers might be explained by Anopheles Rossi not being a carrier of malaria, while in the Duars, where fever was much more prevalent, other forms of anopheles were met with in larger proportion. A short debate followed in which the importance and difficulties of the question raised were recognised, further work being evidently necessary on this subject.

A short paper on "Flagellar Fever" was then read by Major A. Buchanan, in which further cases were brought forward in support of the views recently set forth in the pages of this journal. In the debate which followed, the great importance of the observations of the period when the ripe sexual exflagellating bodies appeared in the blood was recognised, but the general opinion was that further work would be necessary before the exact significance and interpretations of the facts could be safely decided. It is unfortunate that sufficient time and number of cases were not available to enable any of those present to repeat the observations before this discussion, but doubtless this question will now receive the attention it deserves at the hands of investigators both in India and elsewhere.

Owing to want of time a paper by Captain James on "The Value of the Spleen Test as an indication of the Prevalence of Malaria" had to be taken as read, and what promised to be an interesting opportunity for discussing other questions was lost. Thus a memorable meeting was brought to a successful close, and a very general desire was expressed that the experiment might be repeated at an early date and on a larger scale, such as by a second Indian Medical Congress at Bombay or Madras at the end of the present year.

In the evening a public lecture on "Snake Venoms, their Physiological Action and Antidote" was delivered

by Captain Lamb, and proved to be of great interest. It will be published with the proceedings of the convention together with the other papers and the substance of the debates. Before dispersing, a silver bowl was presented by the members of the convention to Major A. Buchanan, I.M.S., in testimony of the great trouble he had taken in organising the meeting.

Indian Medical Service Dinner at Nagpore—One of the most pleasant features of the recent Malaria Convention at Nagpore was a dinner given by the members of the Indian Medical Service to the Chief Commissioner and other officials of the Central Provinces, the members of the Malaria Commission and the non-service members of the Convention at the Nagpore Club. Colonel Scott Reid was in the chair. After the King's health had been drunk, the Chairman proposed the health of the guests in a happy speech, and Dr. Stephens in reply referred to the good work now being done in India in medical research, while Mr. Aitkin also spoke. Mr. Fraser, the popular Chief Commissioner, proposed the health of the Indian Medical Service in a most eloquent and sympathetic speech, in which he referred to the very isolated and strenuous work of the District Civil Surgeon and the burden which fell on him in times of famine and pestilence, which had played so large a part in the recent history of the Central Provinces. Colonel Scott Reid replied on behalf of the service. Dr. Christophers, in proposing the health of Major Buchanan, made a most amusing speech in which he described the formation of the camp and happily let off the characters of some of the "knights" from distant provinces. Major Buchanan in reply described the aid he had received from different quarters in his task of organising the meeting. Lieutenant Colonel Bourke, R.A.M.C., proposed the health of the Chairman, who replied briefly. The intervals between the speeches were agreeably filled by songs, performances with bones, a hornpipe and card tricks in which Captain Heard, Major Roberts, Colonel Bourke and Major Binatwalla took part, and a most pleasant evening was terminated by singing *Auld Lang Syne*.

MEDICAL SOCIETY

THE BOMBAY MEDICAL AND PHYSICAL SOCIETY

THE transactions of this Society for October contain several papers of interest, one of them by Captain G. Lamb, I.M.S., on the action of snake venom on the coagulability of the blood we have published in full.

The next paper is by Dr. Arthur Powell which we quote *in extenso* as follows on—

FIVE CASES OF SCREW-WORM IN THE MAXILLARY SINUSES

"As harmless as a fly," is a proverb which modern observations have reduced to an absurdity. Various species of *estrids* do much damage to cattle, and a few cases are recorded in which they have become parasitic on man. It is now known that it is only as a carrier of contagion that the *tse tse* fly is dangerous, and there can be little doubt that cholera, tubercle, enteric and other diseases are spread in many cases by the common house or blue bottle fly.

Case I—Bengali female, aged 45, was brought to hospital in a comatose condition. There was a very foetid discharge of bloody pus from both nostrils. In it were numerous living maggots. The whole face was swollen and oedematous from a brawny diffused inflammation. The eyelids were so swollen that a view of the cornea could not be obtained. There was a linear perforation of the hard palate. She died immediately after admission. There was no autopsy.

Case II—Mussalman, aged 35, complained of great pain in the left superior maxilla. There was a copious discharge from the antrum of a blood stained glairy fluid, such as is often found in cysts of this region. The antrum was trephined, and many scores of larvae were washed out, and for several days continued to come away. Boric acid, Iodoform, tobacco infusion, Hydrarg. Perchlorid 1 in 1000, Carbolic lotion 1 in 25, apart from the mechanical effect of douching, were perfectly harmless to the maggots. Turpen

tine and camphor dissolved in turpentine seemed to annoy them and make some of them crawl out. Patient recovered.

Case III—Coolie woman, aged 50, for a year suffered from left facial paralysis. The eye ulcerated and was destroyed. Ulcers formed between the gums and cheeks. In October 1897, a profuse discharge of bloody pus came from the left nostril, scores of maggots were removed. She died in a few days with symptoms of the septic meningitis. No autopsy.

Case IV—Bengali male, 35, admitted to hospital, looking like one suffering from phlegmonous erysipelas of the face. Many maggots issued from both nostrils. Died day after admission.

Post mortem—The right maxillary and both frontal sinuses contained numerous living maggots, all were not collected, but those that were taken at the *post mortem* examination with some that were discharged during life measured an ounce and a half in bulk. The inner wall of the maxillary sinus, the cribriform plate, the roof and base of the right frontal sinus were bare and necrosed. The base of the brain and meninges were bathed in greenish yellow stinking pus. Secondary pyæmic abscesses were found in the lungs and liver.

Case V—A Patni woman, aged 35 said to have been ill only five days. The face was swollen as in erysipelas. Numerous maggots were discharged from the left nostril. There was a glairy discharge mixed with blood and pus from both nostrils. The inner wall of the antrum was necrosed. The hard palate had a small perforation, probably syphilitic, which had existed for months. I think I am justified in saying hundreds of maggots were removed. The necrosed wall of the antrum was torn away with forceps. Injections seemed to have little effect on the animals. Chloroform vapour was certainly the most efficacious in getting them to let go their hold and crawl out, but was apt to blister the nostrils. A plug of absorbent wool saturated with chloroform placed inside a tubular nasal speculum was found most convenient. This patient was removed by her friends in apparently a moribund condition, but was to my surprise, brought back after a fortnight, maggots still issuing from the sinus. I have no notes as to how the case ended.

Remarks—The insect is one of the Diptera. The larva and pupa correspond in all respects with *Lucilia Homini-vorex*, the "Screw worm" of America. The maggot is of a white colour. Those I have preserved in spirits became of a brown tinge in a few days. The average length is 15 mm. It is made up of twelve segments. The anterior border of each segment carries a number of minute hairs or spines arranged in rings. These bands are four in number on all segments except the first three where there are only three rings. The first segment may have only two rings. On the dorsum these four bands are at the anterior edge of the segment, but at the sides the anterior two rings cross over to the posterior margin of the preceding segment, so that on the ventral surface there are two rings of bristles on the posterior and two on the anterior margin of each segment. This looks somewhat like the thread of a screw and is the reason of the American name "Screw worms." The head is provided with two powerful hooks. The pupa is about half an inch long of a mahogany colour. The fly I have only once succeeded in producing. It was of a metallic bluish colour. I at once pinned it on a piece of mutton on which some larva and pupæ were and proceeded to photograph it. I had focused it in my verandah, went into the room for the plate, and on my return, mutton, fly and all had disappeared. Some cat or kite had, I presume, made off with it. I sent specimens of the larvæ and nymphæ to the Indian Museum in Calcutta.

Seasonal prevalence—All five cases occurred in the beginning of the cold weather. October or November. This may be a coincidence, but probably indicates a seasonal prevalence.

Vitality—Ordinary antiseptics have little effect on the larvæ.

Dr. Chartres, S. M. O., Nigeria Protectorate, and I placed some larvæ in carbolic lotion 1-40, in Liquor Hydrarg. Perchlor. B. P., and in 50 per cent. alcohol. At the end of an hour and ten minutes not one had yet died. Chloroform, the volatile oils, such as camphor and turpentine, xylol, benzol, seem to annoy them. Their vapour certainly always sets up a commotion during which they may be mechanically washed away. Iodoform, boric acid or the strongest tobacco infusion they treat with indifference. I have removed a maggot from a bottle of Iodoform in which he was buried for two hours, and he promptly proceeded to gnaw some mutton as if nothing had happened.

Do they attack the healthy mucosa—Case III had ulceration of the mouth, Case V had perforation of the palate, before the maggots appeared, Case I could give no history, but it is probable that the palate was perforated before the visit of the flies. In the other two cases I could find no pre-existing lesion. It would appear probable from these cases that an existing ulcer is a predisposing cause.

ANNUAL REPORTS

THE N W P AND OUDH CIVIL HOSPITALS. REPORT, 1900

THE year closed with 484 dispensaries in working orders, and 3,633,170 patients were treated in them during the year. This figure, large as it is, shows a falling off, due in great measure to plague preventive measures and to the lesser prevalence of malaria. Seven districts showed an increase. There were 4,342 beds for patients being an increase of nearly 300 on the previous year. Forty five per cent. of the patients paid voluntarily for their diet.

Fifteen ovariectomies were done by the following medical officers—Lieutenant-Colonel Anderson, I.M.S., Agra, 4, Major J. M. Caddell, I.M.S., Fyzabad, 3, Major G. B. French, I.M.S., 1, Lieutenant-Colonel Sweeney, I.M.S., Assistant-Surgeon Ohldegar, Assistant-Surgeon W. J. A. Hogan, Miss Sykes, Miss Pailthorpe, Assistant Surgeon S. K. Mukerjee and Captain S. F. St. D. Green, R.A.M.C., 1 each.

Lieutenant-Colonel J. H. Sweeney did 4 Porro's operations, Lieutenant-Colonel J. Anderson, 2, Lieutenant Colonel B. O'Brien, 1, Miss Neibel, 2, and Miss McDowell, 4. The following *Cæsarian* sections were done—Major G. H. Baker, 2, Miss Pailthorpe, 1, and Assistant-Surgeon R. S. Surin, 1. The following medical officers did over 200 operations, selected list, Lieutenant-Colonel Anderson, 944, Major G. H. Baker, 827, Major Caddell, 408, Lieutenant Colonel Moriarty, 264, Lieutenant-Colonel Sweeney, 224, Lieutenant-Colonel J. Sykes, 219, Major J. K. Close, 205, Lieutenant-Colonel C. O. Smith, 204, Mahomed Abdul Rahman, 230, Tarakanath Ghose, 277, Ram Rich Pal, 213, Har Prasad, 233. The following officers did over 100 cataracts—Anderson, 679, Baker, 649, Moriarty, 166, Sweeney, 199, Sykes, 133, Close, 123, Assistant Surgeon Hardy, 127, Morwood, 141, O'Brien, 111, French, 116, Pisani, 102, Andward, 105, Hawkins, 128, Mhd Abdul Rahman, 215, T. N. Ghose, 121, M. N. Basu, 112, M. M. Das, 134, turning now to Statement III A, we find the following important operations done viz removal of tumours, 1,585; amputations, 476, rhinoplastic, 60, restoration of lips, 10, harelip, 41; artificial pupils, 152, iridectomies, 422, solution of lens 13, cataracts, 5,990, tracheotomy, 8, excision of breast, 39, laparotomy (not further specified), 23, enterorrhaphy, 10, oterectomy 3, colostomy, 1, colotomy, 5, for intestinal obstruction, 2, hernia 110, for strangulated hernia, 51, for radical cure, 15, abscess of liver, 59 (19 cured), nephrotomy, 2, nephorrhaphy, 2, hemorrhoids (by injection, 2, by ligature, 77, by excision 80, by cautery, 12), stone operations, suprapubic, 51, lateral perineal, 336, median perineal 31; vaginal, 4, lithotripsy, 11, litholapaxy, 461, calculi in urethra, 153, operations for hydrocele by tapping, 10,647, tapping with injection, 429, incision, 682, excision of parietal part of sac, 205, castration, 21, ovariectomy, 15, extrauterine gestation, 1, hysterectomy, 4. As regards methods of operations for stone in the bladder, we find that the following medical officers prefer (as far as these figures indicate) the crushing operation—Lieutenant-Colonel Anderson, Lieutenant Colonel M. D. Moriarty, Lieutenant-Colonel J. Sykes, Major J. K. Close, Lieutenant Colonel C. O. Smith, Assistant-Surgeon Hardy, Lieutenant-Colonel Willcocks and Major Garvie. On the other hand, we find that the following Surgeons did most of their operations by lithotomy—Major G. H. Baker, Major J. M. Caddell, Captain G. T. Birdwood, Assistant Surgeon Carroll, Major Scotland, Major Woodwright, Captain Lumsden, Captain Milne, Assistant-Surgeon Heathcock, and, on the whole, the Assistant-Surgeons used lithotomy in greater degree than the crushing operations, with some notable exceptions. How far the use of lithotomy depends upon personal predilection or want of the proper litholapaxy instruments it is not easy to say, but many of the hospitals we understand, have not been supplied with complete sets of lithotrites.

The report is a record of an enormous amount of good surgical medical work.

THE REPORT OF THE SANITARY COMMISSIONER, BOMBAY

WE have received a copy of the report of the Sanitary Commissioner with the Government of Bombay, one which we do not seem to have been favoured with of recent years. It is submitted by Lieutenant Colonel J. W. Clarkson, I.M.S.

The report commences by recording the fall off in the population in the last five years of the past decade, leaving the total population of the presidency nearly a quarter of a million less than in 1891.

One table which we do not remember in the sanitary reports of other provinces deals with the vital statistics of Europeans and Eurasians. It will surprise many to learn that in Bombay Presidency the Europeans are in much larger

number than those classed as Eurasians, viz., 18,486 to 8,519. The city of Bombay returns in the census of 1891 (why is this used in the table?) 10,251 Europeans and only 4,330 Eurasians. Of the 373 deaths among Europeans 1.6 per mille were from cholera, 1.14 from small pox and only .59 from plague, while the rates for Eurasians were 2.70 per mille from cholera, 1.29 from small pox and 1.41 from plague. The Bombay birth rate in 1900 was only 28.3 per mille, the lowest of the decade, against a mean of 35, "a result," says the report, "due to the weakness induced by famine," for every 100 male births 92.3 female were recorded, but it is probable that the registration of female births is still defective especially in Sind. It is unfortunate that the table showing the recorded birth rate in towns in sequence of high birth rate is left out, owing, apparently to the compression orders. The number of still born children recorded is for the whole Presidency 1.68 per cent to those born alive, but varies enormously from no less than .16 per cent. in city of Bombay to .72 only in Sholapur. Plague and famine accounts for much of this.

The death rate per mille was enormously high, viz., 70 per mille contrasted with the ten year mean of 31.2 for every 100 females who died 115.3 male deaths were recorded. The high death rates in several registration districts are attributed to the famine, and to defective registration due to confusion caused by "the sudden and sweeping outbreaks of cholera." This disease caused no less than 8.7 deaths per mille of the population, while small pox caused only .62 and, more strangely still, plague is only credited with 1.76 per mille. Taking rough totals cholera caused over 163,000 deaths, small pox, close on 10,000, plague, 33,000, "fever," over half a million, and bowel-complaints, 214,000. This large mortality is to be chiefly ascribed to the results of famine, even those areas not directly famine stricken suffered from the influx of weakly refugees. During 1900 there were 569 deaths from plague in Aden.

Under the heading "cholera producing causes" the Deputy Sanitary Commissioner, Western District, writes that bad and scanty drinking water, insufficient and unsuitable food, operating on crowds of beggars and wanderers were sure to induce outbreaks of cholera. In the hilly districts the Bhils lived on roots and barks of trees, and on admission to the poor houses were found suffering from dysentery, &c.

In Gujarat, the origin of the cholera could not be traced, but it was no doubt imported. Permanganate was used with good effect, but its effect was temporary, "the tide of disease ebbed, flowed, and almost disappeared, but revived and burst out afresh." It is not improbable that widespread re-infection of wells took place from the clouds of dust" during May.

The mortality from small pox was also highest of the decade, no district was free, the city of Bombay had a severe outbreak owing to the influx of strangers, and no less than 34,800 vaccinations were done in the city in three months.

The number of deaths from "fevers" is also the highest of the decade. In Gujarat the greatest number of deaths were recorded as due to "fever" in May, and the Deputy Sanitary Commissioner of Gujarat believes that many cholera deaths were so returned. No case of relapsing fever was found, though it was carefully looked for by Captain Lamb, I.M.S., and the Deputy Sanitary Commissioner. A peculiar type of fever did prevail up to the rains, and was quickly followed by a very severe epidemic of malarial fever. The following figures give the recorded mortality from plague since its beginning in 1896 in Bombay Presidency (1896) 2,086, (1897) 46,944, (1898) 86,191, (1899) 96,598, (1900) 33,190 or the great total of 265,013. To diarrhoea and dysentery are attributed in 1900 no less than 218,243 deaths, or a mortality in one year almost equal to four years of plague. This mortality is enormous, and is four and a-half times greater than the decennial mean, thus illustrating forcibly the evil effects of famine. "The famine brought to light many new kinds of grain as food, chief among these are endless varieties of grass seed any patch of grass was shaved close to the ground, and the ground carefully swept, and the miscellaneous collection of seeds ground to a meal and eaten as cakes." "It is astonishing," goes on the report, "how many hundreds of people have been able to keep body and soul together on a diet of grass seed cakes. The consumption is now so large that the collection of grass seeds has almost become an industry." The above quotation will enable those who lived in more fortunate districts to understand what the Gujarat famine meant.

In section X of the report we note that the Sanitary Commissioner was placed under the Surgeon General of the Presidency—a step against which Lieutenant-Colonel J. W. Clarkson, I.M.S., protested as he considered it most retrograde and likely to be very injurious to the Sanitary Department. Page 41 of the report gives a table of the "deaths from starvation," which amounted to 5,379. "Even with the best arrangements, such deaths in a wide spread and severe famine are to be expected." A list of

thirty European medical men is given who were on famine duty during the year, as well as a long list of medical subordinates. Of the latter nine died on famine duty, eight from cholera. The Sanitary Commissioner calls attention to the good work done by Lieutenant-Colonel A. W. F. Street, D.S.O., I.M.S., Major Dyson, I.M.S., and Major Arnim, I.M.S. An appendix to the report gives an account of the work of the Health Officer of the Port of Bombay, Major J. Crummin, V.C., I.M.S., no less than 65,066 vessels were examined, and 1,173,059 persons, crew and passengers. The beddings and clothes of 71,555 persons were disinfected. Only six steamers entered the harbour having plague cases (eleven in all), and 12 cases of jigger were detected on arrival from "jigger infected" ports.

Professor Haffkine examined sample of sea water from ports of the harbour, and detected comma shaped bacilli, differing from the true vibrios, but indicating "the presence of conditions favourable to the life and development of the cholera species."

In no instance could an outbreak in any foreign port be traced to crews or passengers on vessels from Bombay. Major Crummin's report concludes with the following remark—"Plague in India continues to be of the bubonic type, and so long as it continues so, there is a probability that Foreign and Europeans ports where the people wear boots or shoes will escape being attacked by a virulent and widespread epidemic of bubonic plague." The above report on the most unhealthy year in the recent history of the Bombay Presidency is sad reading—but is also a proof of the very severe work imposed upon all medical officers of the Presidency during the last year of the century.

Correspondence.

THE OCCURRENCE OF TYPHOID FEVER AMONG THE NATIVES OF INDIA

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—In the *Indian Medical Gazette* for October 1901 there appears the statement that "a considerable amount of evidence is accumulating to show that the native of India suffers nowadays not very infrequently from typhoid fever." Further in the *Indian Medical Gazette* for April and December of this year there are numerous cases quoted and many discussions on the subject, so that it seems almost beyond question that the teaching has been hitherto inaccurate on the subject. I have met with a considerable amount of it, and regret that I cannot give a consecutive account of each case as they only came under my care for broken periods, and as I only performed the sedimentation test in a few cases the information might not be considered very valuable. I give below the details of one case, which I watched very carefully, and the result of a *post mortem* examination made on a Gurkha who died from enteric under my care.

History of a Case

Driver S. M., of Abbottabad Mountain Battery, was admitted into hospital on 16th October 1901, stating that he was suffering from fever. Very little information could be elicited except that he had been ill for 3–4 days. His temperature on admission was 103° F., but no symptoms or signs except his facial expression and evidently serious condition could be found to base a diagnosis upon. On the evening of his admission his temperature was 103.4° F., pulse 100 and respirations 36, and it looked very like a case of croupous pneumonia, but there were none of the physical signs of that affection. On 17th, upon examination, coarse rhonchi were heard all over the chest, but there was no dulness, &c. The patient had a cough with mucopurulent expectoration and mild diarrhoea. Upon examination of the abdomen there was no rash, no tenderness, and no discernible enlargement of the spleen. That night he was delirious and slept very badly.

On 18th a specimen of his blood was taken, and the reaction between the diluted serum and an equal volume of typhoid emulsion was tested in capillary tubes. After about five minutes a difference could be seen between the specimen and control tubes, and after twelve hours distinct sedimentation had taken place.

On the 19th the patient's condition was considerably worse, and his motions, though not numerous, had the typical pea soup characters. Sordes had accumulated in large quantities the lips and teeth, and the tongue was dry and very foul. He was only conscious at intervals.

His condition grew worse daily in spite of every effort that could be made, and on the 23rd his temperature began to fall.

No spots appeared all this time, and examination of the patient gave little or no information. There were no indica-

tions to account for this fall in temperature, and it gradually continued until 26th when he died. He was comatose for almost the last three days of his life.

Post mortem Examination

This was performed two hours after death. The body was very shrunken, and rigor mortis had set in markedly. There was a sweat rash on the abdomen.

On opening the abdomen the small intestine was found extremely congested, the mesenteric glands were greatly swollen, and all the mesenteric vessels like cords. The spleen showed nothing significant. The interior of the ileum was much discoloured by a greenish brown viscid material which had stained the mucous membrane deeply. On its removal the Peyer's patches appeared considerably swollen as were also the solitary follicles.

The process of ulceration had started everywhere, and the solitary follicles presented a crater like appearance. Close to the periphery of the patches long ragged masses of oedematous tissue hung free into the lumen of the gut, but ulceration had not proceeded in any place to a great depth.

No other pathological condition was noticeable.

Points of Interest

1 The extreme severity of the case and the very characteristic post mortem appearances.

2 The very misleading respiratory symptoms.

3 The extremely foul condition of the mouth and abundance of sordes. This, coupled with some respiratory disturbance, marked every case I have seen, so much so that the coincidence of the two will always lead me to look for typhoid.

4 The absence of any typical symptom of enteric fever.

5 The cause of death I ascribe to toxæmia as toxic symptoms were present from an early date, and there was no lesion found post mortem to account for it.

6 The reaction with the sedimentation test was peculiar. A change was noticed almost at once, but after twenty-four hours I found the bacilli had fallen together into masses at regular intervals forming a series of little disc like platforms in a colourless column of liquid. I have never seen this occur before and can only explain it by imagining that the process was so rapid that masses were formed too quickly to sink owing to contact with the walls of the tube.

Post mortem Examination on a Curkha Sepoy who died of Intestinal Fever

On opening the abdomen the following pathological conditions were noted—

1 There was a considerable amount of serous fluid in the peritoneal cavity.

2 The mesenteric lymphatic glands were greatly enlarged.

3 Slight enlargement of the spleen (this, though slight, was easily discernible on palpation ante mortem).

4 Intense congestion of the peritoneum in patches along the anti mesenteric border of the intestine.

5 In several places the omentum was adherent to the intestine along the affected border. No actual perforation could be recognised.

6 The Peyer's patches were deeply ulcerated, in some places down to the sub serous layer.

7 The wall of the gut was greatly thickened in several places where reparative processes had evidently taken place.

It would be interesting to hear upon what grounds the occurrence of enteric among natives was ever denied or considered uncommon. I believe two theories existed.

1 That immunity, acquired by persistently dirty habits of many generations of ancestors has been transmitted.

2 That most natives have suffered from the disease in early life under the heading of 'bukhai'.

But neither of these theories are possible in the face of recent experiments with emulsions, &c, so it seems that the sooner we forget them the better.

Yours, &c,

ABBOTTADAD,
December, 1901

T G N STOKES, M D, I M S

INFLUENCE OF COLOUR AND MATERIALS UPON ANOPHELES *

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—May I be allowed to add a few remarks on the subject of the influence of colour and materials upon anophelines, to supplement those of Captain Liston, I M S, in his contribution to the last number of the *Indian Medical Gazette*.

My experience has been similar to his, in that the colour yellow does not repel the anophelines, as affirmed by Dr George Nuttall in a recent number of the *British Medical Journal* but at the same time I have frequently found them resting on silk. In Dinapore in August and September of this year anophelines were fairly common in my house, and my "trap" for them was an orange yellow Chinese silk purdah hung in a darkish corner of the bed room. Frequent visits to this curtain during the day resulted in a daily mortality of from six to ten insects, whilst in the whole of the rest of the room (a dark one), it was the rarest thing to find any, either on hangings, clothes or walls.

In the spring of 1900 I had several pairs of curtains of coarse twill calico, and a punkah frill of art muslin, made for my house at Fyzabad. These were dyed in the bazaar with native dyes. The punkah frill orange, and the curtains yellow, green and dark crimson. These curtains have been in use on and off ever since in various stations, and although I have frequently sought for mosquitos, I have never found a single specimen of either culex or anophelines resting on them, in fact the mosquitos appear to shun them altogether.

This I attribute not to the colour or the material but to some substance common to the various native dyes and inimical to the mosquito, and the subject seems well worth further investigation.

KOHIMA,
ASSAM

I am, &c,
W S WILLMORE,
Lieutenant, I M S

A "HARD CASE"

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I should be much obliged by your giving me an answer to the following "Hard Case."

A, a Captain I M S, is appointed in September to the civil medical charge of a station and relieves B, a Major, R A M C, who is the only medical man in the station, and has been acting, in addition to his own duties, in charge of the civil station.

Soon after A's arrival B tells A that he wishes to go away for ten days at Xmas and asks him if he will answer for him at the Station Hospital.

A refuses, as he wishes to go into the district himself at Xmas and advises B to apply for leave, and for some other R A M C man to do his work.

During the next two months A answers for B for a day or two on two different occasions, and A goes into camp for a week and B looks after one or two private cases for A.

In December B's leave is refused unless he can make local arrangements, and he again asks A to act for him.

In the meantime A has accepted an invitation to join a Xmas camp in the district and consequently refuses B's request, but is willing to do B's work for any other ten days. B is very much offended, and accuses A of acting in an unprofessional manner and writes him a letter to say that in future he will do nothing for A except in urgent cases. Up to this time A and B had been on the most friendly terms.

What should A do?

Apologising for troubling you

I remain,
Your obedient servant,
PUZZLED

15th December, 1901

PRELIMINARY NOTE REGARDING A DISCOVERY IN CONNECTION WITH THE ETIOLOGY OF THE DISEASE KNOWN IN THE TEA DISTRICTS OF ASSAM, CACHAR AND SYLHET, AS "PANI GHAO" OR "WATER SORES"

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In June 1901, the *Journal of Tropical Medicine* published an article by the pen of Dr Dalgetty of South Sylhet, dealing with the etiology of the disease endemic in the tea districts, and generally known as "Pani ghao" (the native term), or as "water sores" or "sore feet of coolies."

Dr Dalgetty arguing from the resemblance which the disease bears to the lesions of ordinary scabies, inferred a similar causation, and finding a small acarus present in the crusts from a certain number of cases, considered this to be the cause. Unfortunately the mite, which he described at length in his interesting article, appears on investigation to be only saprophytic in its habits. It is true that it may be found in the dried scabs or crusts from any neglected sore, in this country, but it also occurs in the refuse from grain crushing mills and may be bred in large numbers on almost any dry animal matter.

* For a fuller account of the influence of colour on Anophelines, see Nuttall in *Journal of Hygiene*, Vol. 2, Jan 1902, p 72.—Ed., I M S

It certainly cannot be considered as a factor in the causation of a disease such as "water itch."

A number of experiments and observations, carried out during the past season, show that the real cause of the disease in question is the *Dochmius Duodenale*.

This larval nematode is present in the soil surrounding the lines of tea garden coolies in very large numbers during the rains, and it is through its attacks upon the bare feet of the coolies that the characteristic lesion of the disease is produced. Judging from the result of experiments, the larval worm penetrates the skin, and in its passage introduces a number of putrefactive organisms whose presence produces the resulting inflammation and suppuration.

As the result of experiments the disease was produced artificially upon the arm and leg of a boy, a culture of the ankylostomal larva being used in one case and soil known to be infected by the larval *dochmius* being used in another. Similar experiments tried with Dr. Dalgetty's acarus proved entirely negative.

I am continuing investigations in order to try and trace the final resting place of the larva which penetrate the skin in the manner indicated.

The observations made, so far, give complete corroboration to the statements made at the last meeting of the British Medical Association by Professor Sandwith of Cairo.

I shall hope to forward shortly a full account of the experiments and observations which led to the above discovery.

CHAS A BENTLEY,

January, 1902

M.B., C.M. (EDIN.)

Medl. Offr., Empire of India and Ceylon Tea Co

Service Notes

FROM the 1st January 1902, Surgeon General Benjamin Franklin, I.M.S., C.I.E., Honorary Physician to the King, has been appointed as Director General, Indian Medical Service. Surgeon General Franklin was born on 30th April 1844, and was educated at University College, London, and Paris University. He took the diplomas of M.R.C.S. in 1867 and L.S.A. in 1869 and entered the service in the latter year. He was promoted Surgeon on 1st July 1873, Surgeon Major, 1st April 1881, Brigade Surgeon, 1st January 1894, Surgeon Colonel (seconded) on 25th October 1897. In 1889 he was appointed Surgeon to the Viceroy (Lord Lansdowne) and afterwards to Lord Elgin. On the 2nd April he was appointed Inspector General of Civil Hospitals, Punjab, a post which he held till he became Director General. On 22nd March 1898, he was appointed Honorary Physician to the Queen, and is now the only officer on the active list holding the appointment of Honorary Physician to the King. He has no war service. Before his appointment as Surgeon to the Viceroy, he was in civil employ in the Central Provinces, and was for five years Civil Surgeon of Simla.

WE are indebted to Lieutenant-Colonel D. G. Crawford, I.M.S., for the following details of the other officers I.M.S., who formed Surgeon General Franklin's batch. The first man in the batch was Colonel W. Cair Calthrop, who is still serving as P.M.O. and Sanitary Commissioner of Assam. Next came A. Wood, who died in London 16th January 1878, then came R. O. Sanders till recently Professor of Ophthalmology at the Medical College, Calcutta, and who after retirement is still practising his profession in Calcutta, then E. Sanders, who retired in 1891, and next came the new Director General, and sixth on the list was F. P. Edis who died of phthisis at Santa Barbara, California on 9th October 1881. Then came R. Temple Wright who retired in 1894, and after him G. McBride Davis, C.B., who is A.M.O. of the Punjab Frontier Force, then came K. P. Gupta, who retired in 1898 and H. J. Linton, who died at Peshawar on 4th April 1892. Therefore of the batch of ten, three officers still are on the active list.

THE only officers in the I.M.S. on the active list who are senior to Surgeon General Franklin are Surgeon General Spencer who retires this year, Colonel G. Hutcheson, Inspector General Civil Hospitals of N.W.P. and O., and Surgeon General G. Bambridge, the Surgeon General with the Government of Bombay.

THE undermentioned military pupils, having passed their final examination, are admitted into the service as fourth class Assistant-Surgeons, with effect from the 27th September 1901 in the Bombay Command —

Habert Felix DePenning
Stanislaus George Smyth
David Ernest Barlett
Archibald Raymond Hastings Boyne
Lionel Vivian O'Brien Pasdon
Sydney Francis Hastings Boyne
William Hugh Maher
Hermann Frank Otto

LIEUTENANT COLONEL A. T. L. PATCH, I.M.S., is permitted to retire from the service with effect from 19th June 1901. Lieutenant-Colonel Patch was medical officer of Kunool, and went on furlough on medical certificate on 10th December 1898. He entered the service in April 1881.

LIEUTENANT C. F. MARR, I.M.S., went in charge of D Section, No 52 N Field Hospital, mobilised for duty with the operations in Waziristan.

THE following has been received for publication —
"Mrs Harvey begs to offer her grateful and heartfelt thanks for the deep sympathy she has received from all parts of India regarding the death of Surgeon General Harvey. The letters and telegrams are so numerous, however, that Mrs Harvey finds it impossible to reply to them all individually, and is reluctantly compelled to ask her friends kindly to accept this acknowledgment of them."

LIEUTENANT J. C. S. OTELEY, Indian Medical Service, is permitted to proceed to England on medical certificate, in anticipation of leave which will hereafter be granted.

THE following appointments are made — Lieutenant Colonel Swayne, Royal Army Medical Corps, to officiate as Principal Medical Officer Moerut and Bundelkhand Districts *vice* Colonel Burnett, appointed to officiate as Principal Medical Officer, Bengal Command, Lieutenant Colonel Bomke to officiate as Principal Medical Officer, Mhow and Deesa Districts, *vice* Lieutenant Colonel Blood, transferred to the Home Establishment, Lieutenant Colonel Mapleton, to officiate as Principal Medical Officer, Poona District, *vice* Swayne.

LIEUTENANT COLONEL E. CRETIN, I.M.S., 1st Brahmins, is granted leave in India for six months.

THE following notifications appeared in the *Gazette of India*, January 4th, 1902 —

Home Department — The services of Lieutenant Colonel McConaghy, I.M.S., are replaced at the disposal of the Government of the North Western Provinces, with effect from the date on which he was relieved of his duties as Officiating Inspector General of Civil Hospitals, Bengal.

A NEW feature appears in recent *Gazettes of India* *viz*, the orders of the Chief Commissioner, N.W. Frontier Province, in them we read that Lieutenant W. H. C. Foster, I.M.S., assumed charge of the civil medical duties of Wana relieving Lieutenant F. V. O. Beit, I.M.S., and that Lieutenant-Colonel J. W. Rogers, I.M.S., made over charge of his civil duties at Kohat to Lieutenant J. A. Walker, I.M.S., on the former's going on furlough.

LIEUTENANT W. S. WILLMORE, I.M.S., has taken over charge of the Civil Surgeon's duties at Kohima, Assam.

DOCTOR F. W. TWIDALE was appointed Civil Medical Officer, Malda, on 21st December 1901.

THE following appears in Bengal Command orders —
"The Lieutenant-General Commanding Bengal is of opinion that Superintending Officers and Boards of Examinations in

the native languages do not always fully realise their responsibilities in the matter of exercising the utmost vigilance and in observing the various regulations laid down for the conduct of such examinations. Superintending officers are to be most careful that no communication with natives, or others, outside the examination room, can possibly be held by the candidates and that all orders laid down are strictly carried out, arrangements should be made for the examination to be held in a room with bath room attached, the bath room door and windows to be secured so as to prevent any communication with any person outside. All concerned will be held personally responsible that this is done."

The address of the Secretary, Board of Examiners, Calcutta, will be No 26, Mangoe Lane, Calcutta, from the 1st January 1902

The death is announced at Brighton of Surgeon Major David R Ross, M.D., I.M.S. (retired)

LIEUTENANT COLONEL C MONKS, I.M.S., Port Surgeon, Aden, has been granted two months' extension of leave (m.c.) by the Secretary of State

CAPTAIN F. H. C. HUTCHINSON, I.M.S., was appointed to act as Civil Surgeon of Jacobabad in addition to his military duties

CAPTAIN C. R. BAKHLE, I.M.S., acted as Civil Surgeon of Sukkur, in absence of Captain Ashton Street, I.M.S., F.R.C.S.

CAPTAIN A. HOOTON, I.M.S., is appointed as Deputy Sanitary Commissioner, Gujarat, *vice* Lieutenant-Colonel J. W. T. Anderson, F.R.C.S. (Ed.), I.M.S.

MAJOR C. B. FRENCH, I.M.S., is transferred from Meerut to Muzapuri as Civil Surgeon

The order placing the services of Lieutenant G. P. T. Groube, I.M.S., at the disposal of the Government of Burma, is cancelled

The services of Captain M. Dick, I.M.S., and Lieutenant M. N. Chaudhuri, I.M.S., are placed temporarily at the disposal of Burma

The services of Captain T. H. Delany, M.B., I.M.S., are placed temporarily at the disposal of the Government of Bengal

The services of Captain B. Nauth, I.M.S., are placed temporarily at the disposal of Madras Government

CAPTAIN GEORGE BIDIE, I.M.S., F.R.C.S.E., who has been on furlough out of India for the past 21 months on return joins the Assay Department, Calcutta Mint, as a probationer

LIEUTENANT J. GOOD, I.M.S., F.B., takes charge of D Section, No 62 Native Field Hospital, mobilised for the Waziri operations

LIEUTENANT COLONEL M. S. EYRE, I.M.S., goes to China, and Captain M. B. Pinchard, I.M.S., assumes charge of the 23rd Madras Infantry

CAPTAIN J. H. HUGO, I.M.S., goes to Eden Hospital, Calcutta, and not to Nadia as Civil Surgeon as at first gazetted

MAJOR L. J. PISANI, I.M.S., F.R.O.S., is granted combined leave for nine months and ten days from 15th January

LIEUTENANT COLONEL J. YOUNG, I.M.S., recently P.M.O., Presidency District, holds civil medical charge of Roorkee

SURGEON GENERAL SIR T. GALLFWAL, R.A.M.C., is appointed P.M.O., H.M.'s Forces in India, *vice* Taylor

LIEUTENANT COLONEL S. J. THOMSON, C.I.E., I.M.S., the Sanitary Commissioner, N.W.P. and O., goes to South Africa for superintendence of the Boer Concentration Camps

CAPTAIN R. BIRD, F.R.C.S., I.M.S., has gone home on privilege leave, and Captain T. H. Kelly, F.R.C.S., (Ed.), acts for him at the Calcutta Medical College

CAPTAIN CLAYTON LANE, I.M.S., succeeds Captain Maddox, I.M.S., as Civil Surgeon, Chupra

CAPTAIN J. H. HUGO, I.M.S., D.S.O., joins the Medical College, Calcutta.

CAPTAIN GIFF. LISTON, I.M.S., is gone Netley for the special course, and Captain Windsor, I.M.S., shortly returns to India

When Colonel Kenn, R.A.M.C., goes on leave in March Captain W. E. A. Armstrong, I.M.S. (Madras) now Residency Surgeon, Nepal, will act as Surgeon to His Excellency the Viceroy

Notice

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis if requested

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Annual Subscriptions to the *Indian Medical Gazette* Rs 12 including postage

BOOKS, REPORTS, &c, RECEIVED

Medical Register for Bengal (I. G. C. H.'s Office), 2 vols
Menstruation by Giles (Baillière, Tindall & Cox).
The Healing of Nerves by Ballance and Stewart (Macmillan & Co)
The Report of the Plague Commission, 5 vols
The Medical and Surgical History of the China Japanese War (Tokio Press).
Colors Practice of Medicine 4th Ed (Young J. Pentland)
The Cure of the Morphia Habit by O. Jennings, M.D. (Baillière, Tindall & Co)
The Year book of Treatment (W. B. Saunders & Co)
Reprints from Medical Society of Gand

COMMUNICATIONS RECEIVED FROM —

Surgeon-General Franklin, I.M.S., Calcutta Major D. M. Moir, I.M.S., Calcutta Capt. S. P. James, I.M.S., Nagpur Capt. Birdwood, I.M.S., Jabalpur, Major Chaytor White, I.M.S., Lucknow Dr. A. Charles Evans, Ammapatam Lieut. Col. Crawford, I.M.S., Hughli Major F. P. Maynard, I.M.S., Patna Lieut. Col. J. Maitland, I.M.S., Madras, Capt. Harrison, I.M.S., Madras Lieut. C. G. Murison, I.M.S., Baroda, Capt. G. Lamb, I.M.S., Bombay Capt. Glen Liston, I.M.S., Bombay, Capt. E. Ross, I.M.S., Rangoon Capt. C. J. Robertson Milne, I.M.S., Calcutta Lieut. Col. G. W. Denny, I.M.S., Peshawar, Capt. Henry Smith, I.M.S., Jullundur Major E. Roberts, I.M.S., Simla Capt. Fridmore, I.M.S., Burma, Major K. Prasad, I.M.S., Shewbo, Major C. R. M. Green, I.M.S., Calcutta.

Original Articles.

SOME PRACTICAL SUGGESTIONS FOR THE PREVENTION OF MALARIAL FEVERS

By G T BIRDWOOD, M A, M D, D P H,

CAPTAIN, I M S,

Civil Surgeon, N W P.

(Read before the Malarial Conference on the 4th January 1902)

I HAVE chosen for the subject of this paper "Some Practical Suggestions for the Prevention of Malaria in India," and I have chosen this subject as the reduction of malaria is the ultimate object of all our scientific research, and the patient labour of our laboratories, and above all the subject of most interest and importance to sanitarians and administrative officers. Although there are still many interesting problems in connection with malaria still unsolved, yet our knowledge has advanced to such a stage that we no longer need speak of a "mosquito theory." We now have facts shown us under the microscope demonstrating beyond doubt how malaria is spread from man to man. We know definitely that anopheles is the chief, if not the only, agent in spreading malaria, it seems therefore that the time has come when something practical should be done. Indeed Civil Surgeons are beginning to ask how best they can protect their patients, and health officers how best they can advise their municipalities. The time seems to have come when the practical sanitarian should step in and utilize the newly acquired knowledge of the last few years. The question is—will all our efforts to suppress malaria in India meet with any success? We who are interested in the matter I think feel confident on this point. If one prophylactic measure seems of little avail, we hope that a combination of them applied to a feverish locality may very materially improve the health of the people in that spot. And we must not be disheartened, if we are not able to reduce the general high death rate from fever all over India. There are not a few doctors in India who think that all our efforts will be in vain. They point out the impossibility of saturating the general native population with quinine, the impracticability of abolishing anopheles breeding pools, or protecting the crowded inhabitants of a native city with mosquito nets. But this hopeless attitude of mind is not a suitable one for India, and of course unworthy of true and real sanitarians. And as doctors and guardians of the public health we are bound to do all we can and to put to the proof every prophylactic measure and combination of measures we have.

Much has already been written about malarial prophylaxis and the value of the different methods, but beyond the disinfection of tanks in Calcutta I believe very little has been done practically in India. The subject can conveniently be divided into two headings (1) domestic prophylactic measures, such as can be carried out on a small scale by the doctor and his patient, in and about the patient's home. Such measures as mosquito curtains, isolation of sick, treatment of breeding pools in the compound, (2) and, secondly, State prophylactic measures, such measures, which can be carried out by municipal or cantonment authorities. I do not in this paper propose to deal with the former at all, or even to go in full detail into the latter. I want to point out a few of the common insanitary conditions met with in municipalities and cantonments, which predispose to malaria, and discuss a few suggestions how best we might deal with them.

In dealing with malarial prophylaxis in India there is one important fact, which one should always bear in mind. This is the many varying conditions which

prevail in every district, nearly in every town in India. The most prevalent condition in one place may scarcely be found in another, and one species of anopheles which is common in one place may be rare in another. And although the fundamental principles of prophylaxis (i.e., the suppression of anopheles and the protection from his bite) are the same at all stations, yet a hard and fast set of rules for every locality cannot be laid down. For instance, conditions predisposing to malaria in a comparatively dry place like Nagpur are very different from those met with in the dense jungle of the Terai, the conditions of a dusty cantonment of the Punjab are very different from those of a water logged municipality near Calcutta. In fact each town almost has its own peculiarity, in one an excess of tanks, in another bad *latcha* drains, in another excessive canal irrigation, in another bad hydrants. Therefore if we wish to get the full measure of success of our prophylactic precautions, it seems to me most important that local conditions should be first well and carefully studied. A hard and fast set of rules circulated to magistrates and subordinate medical officers without reference to local conditions will be productive of comparatively little good, except for general guidance. So that I am only able to speak to you about my own experience, I cannot very well suggest to you (who come from all parts of India) that you should do this, or do that, when I do not know your local conditions. But this I can say that, if each medical officer in India will carefully study the local conditions of his town or station in the light of the researches of recent years, he will find many conditions which can be remedied, and he will be able to suggest a practical line of action to his local authorities.

First I would like to preach a crusade against obvious anopheles ponds in cantonments and municipalities. Although local conditions vary much throughout India, yet there are several conditions predisposing to malaria, which are common to all municipalities. One of these is the presence of very obvious anopheles ponds. These ponds are often so conspicuous, so close to houses and inhabited spots, that if house holders and medical officers realized the danger they were, immediate steps would be taken to have them filled in. The prevalence of these ponds varies very much in different stations. In one or two cantonments I have found them almost at every corner. I will give in detail a few of the causes of these ponds, what sort of localities they are found in, and how to deal with them. (1) A very frequent position is the corner of a European compound. Such ponds are usually caused by the coolies of the landlord, who come to repair the stables or the servants' houses, and for this purpose, excavate earth. Full of algae and stocked with anopheles larvae, they are a dangerous source of fever to the European inmates of the houses and also to the native servants and syces who live close by. (2) Other obvious anopheles ponds are frequently met with near native regimental lines. The houses of the sepoys are generally *kuicha*, and the earth for the annual repairs is taken from a pond in the immediate vicinity of the lines. I feel convinced that if such ponds were filled in, cases of fever in their neighbourhood would be much fewer. To turn to municipalities, there are several causes of obvious anopheles ponds. (3) The commonest I suppose is, that the landlord or householder repairs his house and enclosure wall by digging earth from any available open space of ground close by. (4) Other offenders in this respect are brick and tile makers. In order to get earth for their bricks, large ponds are dug within municipal limits near inhabited areas. There is one municipality in the N W P. notorious for its high fever death rate, and this I attributed chiefly to the presence of numerous old brick fields where ponds abound. (5) Anopheles ponds too are often dug by men, who contract to repair the roads. In order to bank up the metalled surface, earth is dug from a ditch at the road side. This procedure does not matter when it is done out in the district,

away from towns and villages, but when numerous ditches are made along the roadside within cantonment and municipal limits, numerous anopheles pools are formed, which become a danger to the community (6) In two municipalities I have found the railway authorities to be the authors of a large set of anopheles pools. When new railway lines are being carried through a town, earth on each side of the line is excavated for embankments and the numerous ponds thus formed.

One of the questions of practical prophylaxis is how best to deal with these obvious anopheles ponds. Some could not be filled up without considerable expense, but in very great many cases, such as those found in cantonments, the ponds are not very large, and could be filled in with little trouble. The fact is that neither householder nor magistrate, and in some cases not even the doctor, realize their dangerous nature. They see a pond but their eyes are blind to its significance and influence. I think if every medical man in India was to keep his eyes open for obvious anopheles ponds, and preach an earnest crusade against them, much good might be done. The eyes of authority and the public generally only want to be opened to their danger, and action will be taken. For if cantonment authorities knew of a source of fever, they are only too willing to deal with it. If the tenant knew that the pond at his gates is the source of fever to himself and his household he will do all he can to get it filled up. So that I am sure that very much may be done at small expense, if each medical officer will use his local influence and do what he can to get these ponds filled up.

I think, however, that Government might help us much in this matter, in dealing more effectually with these ponds and preventing their formation in the future, and under this heading I beg to suggest the following—

(1) Firstly—cantonment authorities might be asked to send a special Health Officer round every cantonment to make a list of these ponds with a view of having them filled in.

(2) Secondly—by laws to prohibit the digging or excavating of earth or ponds within cantonment or municipal limits, would protect these communities in the future.

(3) Brick and tile making might be classified as dangerous trades and not permitted within municipal limits.

(4) Road repairs might be prohibited from digging ditches at the side of roads near inhabited sites.

(5) Railway authorities should be prohibited when carrying new line through a town from excavating for embankments within municipal limits. Earth can easily be imported on their rails from outside.

I beg to suggest to the Conference that we discuss these points and ask Government to consider some such line of action to prevent the formation of anopheles ponds within the limits of municipalities and cantonments. I think if we got this done, we shall have done something practical in malarial prophylaxis.

After the removal of obvious anopheles ponds, I think the Health Officer and Civil Surgeon cannot too strongly insist upon the importance of *pukha* surface drains throughout his municipality. In my opinion it is the keystone of the whole question of the reduction of malaria in municipalities. I take this view chiefly on consideration of the three facts in connection with the life history of the anopheles larvæ which you will, I am sure, pardon me for mentioning—(1) first anopheles larvæ seldom develop on the side of a *pukha* masonry drain, (2) secondly, a larva takes ten days to develop an imago, (3) few larvæ will develop in swiftly flowing water. You all know that the anopheles larvæ love the grassy banks of *kutchas* ponds and ditches, so that this first fact (mentioned above) shows us how important *pukha* surface drainage is. Even garden irrigation if in *pukha* masonry channel, can be carried on close to the house without any danger. In municipalities and cantonments *kutchas* surface drains and stagnant

ditches at roadside, are the most frequent breeding places of anopheles mosquitos. If the roadsides are badly drained, and if these drains are carelessly cleaned without consideration of gradients, and if the public works are allowed to dig ditches at the side of the roads you will have innumerable centres for the spread of fever. The large increase of fever in the rains is chiefly due to accumulation of water in *kutchas* surface drains. If, however, you have every road lined with good *pukha* masonry surface drains, water is generally quickly carried off, but if any should remain the mosquito seldom develops there.

In addition to bad roadside drains, I should like to detail a few other places, where surface drainage is often very bad in municipalities, and where a great outlay would not be necessary to remedy it. For instance, round the mouths of wells, how frequently is the drainage very bad. Fresh waste water daily is added and accumulates in a ditch or morass near the well, and there forms excellent anopheles breeding places. Again around hydrants. Municipalities introduce waterworks and put up hydrants in every quarter of the town, but make no provision whatever for taking off the waste water, so that round every hydrant, good anopheles pools are found and several hundred centres for the spread of malaria are established throughout the town. In fact in more than one town the fever death rate has considerably risen since the introduction of a pure piped water supply, and this has been attributed to the pools of fresh cool waste water which accumulate round every hydrant. As an instance of the great value of good *pukha* surface drainage, I can cite the town of Shahjahanpur in the North West Provinces (where there is now a Boer Camp). This town not only has good *pukha* drains in its roads and streets, but large masonry drains to carry water well away from inhabited sites, the consequence is that this town is one of the healthiest and freest from malaria in India. As an instance of the bad effect of *kutchas* surface drains, I can cite Loralai in Beluchistan, where irrigation is carried on in every garden and along every road in *kutchas* surface drains, the consequence is that this place is one of the most feverish cantonments in India. To get *pukha* surface drains in a cantonment or municipality you will say is merely a matter of money. Well so it is to a certain extent, but not altogether so. For instance, money has occasionally been available in municipalities and no one has thought of devoting it to surface drainage. So that the first thing is to get Health Officers and Magistrates to realize that *pukha* surface drainage is about the most important principles of municipal sanitation. Secondly, if much money is not available, a good deal may be done on a small scale, such as improvements round wells and hydrants, or one small area taken in hand per annum. For badly water logged municipalities, no doubt, an expensive and well planned drainage scheme is the only remedy, but in other towns, if we get one or two good *pukha* drains made per annum, we shall, in the end, do much. Most municipalities have a small yearly allotment for sanitary improvements, and Health Officers would do well, I think, to give surface drainage first consideration in distributing the same. Lastly, I think, it cannot be too strongly insisted on, that no municipality should institute waterworks without at the same time submitting plans and estimates for efficient surface drainage from hydrants. Without such provision, no scheme should be passed. If sanitary engineers and health officers, who give the sanction of their opinion to these schemes, will strongly insist on this, much ill health will in the future be avoided.

There is, I think, no doubt that canal irrigation is a great source of fever to a locality. And I want now to advocate the importance of lining with *pukha* masonry the sites of all canals and irrigation channels within cantonment limits. Cantonments as Meeran Mir, Peshawar and Quetta are all very feverish spots,

and all are well supplied with irrigation systems. The cause of this fever is very largely due to the fact that anopheles larvæ develop at the sides of the smaller irrigation channels. It is, of course, impossible to do without irrigation, but I think the fever of these cantonments would be greatly reduced if all canal and small irrigation channels within their limits were lined with *pulha* masonry sides or walls. It would, of course, be a matter of considerable expense, but the money would be well laid out, when we consider that the cost of a European soldier to the State is popularly estimated at over £100, and also the fact that in these cantonments at certain portions of the year the mortality from malaria is very high. Vast sums are yearly spent on military works as barracks in comparison with which the expense of making *pulha* wells to all canals in a cantonment would be comparatively small. We might, I think, urge the claim of this reform on the ground of the permanent healthiness, which it would bring to a station. Private residents too, if they wish to indulge in the luxury of a garden, should also be compelled to make all irrigation channels in their compounds of *pulha* masonry. I think the Conference might suggest to the Government the advisability of trying as an experiment the introduction of *pulha* sides to all canals and smaller irrigation channels within the limits of one cantonment such as Peshawar or Meeran Mir.

There are occasions when anopheles ponds are not quite obvious. A set of buildings or even a whole town may be severely affected with malaria, and yet very few pools and ponds are visible, under these circumstances I think a good deal of good could be done if municipalities were to employ the services of an officer with a special knowledge of malaria, and get him to make a systematic and detailed examination of the local conditions, and to make a rough map in which he could show with dots of red ink the principal breeding places of anopheles in the town. Dr. Neild Cook in his last Calcutta report states, that a serious fever epidemic, which occurred in some workmen's sheds, was very successfully checked by treating some neighbouring anopheles pools, for which careful search was made. Local authorities if they had a good knowledge of the chief anopheles breeding pools, and if their locality was carefully noted on a map, would be in a position to cope with the original source of the disease and could probably very effectually deal with it. A Civil Surgeon has not time to make this detailed search himself, and at present health officers (in many cases natives) have not yet the requisite training. Such an expert examination of a locality, is all the more necessary when we consider the many varying conditions which affect the breeding places of larvæ. For instance, Anopheles Rosu prefer pools like buffalo pools, while A. Jamesi probably prefers clearer water. Again, A. Nigerrimus and Barbirostris are the ones most frequently found in big tanks. Other factors also come into play, as the slope of the bank, the nature of the grasses. For instance, anopheles larvæ will seldom be found in pools with high rank grass, so that one hollow with water in it may be harmless, and another a good breeding place. In fact, as Captain Glen Liston told us yesterday, different species are to be found in different places. If once for all the chief breeding places of anopheles had been marked down, the Civil Surgeon and local authorities could successfully deal with them, and thus whole blocks of buildings rendered much more healthy. I think the Conference might suggest to Government that in towns and cantonments, which are especially malarious, the visit of a special officer who could map out the sources of the disease, would be followed by practical results.

In connection with the filling up of pools and the clearing up of insanitary conditions, Ross has strongly recommended the employment of gangs of coolies or Mosquito Brigades who shall make a thorough and systematic cleansing of the town, and so, at one swoop,

greatly reduce malaria. This measure is reported to have met with considerable success in Sierra Leone, and it would probably do much good in an Indian city. But, on the whole it is, in my opinion, not very suitable to Indian cities. Many of the conditions around us, as bad surface drainage, are too big to be touched by a band of coolies. Again, many of the insanitary conditions, which have to be dealt with are in the yards and compounds of native houses, and there is nothing the native of this country resents more than interference in and around his house. It is a measure which should be approached with much caution. It seems to me much more good will be done by quietly and persistently filling up ponds and ditches, quietly and systematically improving the surface drainage, and gradually educating the natives to realize the dangers of insanitary conditions around them. This, however is a matter of opinion, and no doubt this measure could be applied with considerable success over small areas of a town, especially where a medical officer is well known and trusted, and the people may be induced to give their consent and willing assistance.

There is one insanitary condition I should like to lay stress on, and that is over crowding among native servants attached to European households, and I wish to advocate the importance of paying some attention to this matter. There is no doubt that the more crowded a native quarter is, the larger the number of cases of fever there will be. Indeed among all grades of Indian life, the poorer and more ill housed the people are, the larger will be the number of enlarged spleens among them. This shows that overcrowding and insanitary conditions have a great influence on malaria in our Indian cities. The Calcutta municipality has made a move in the right direction during the last year in opening up crowded busties, and commencing model lodging houses for native workmen in the city. But this sort of reform requires very large expenditure, and much philanthropy and private generosity. I think, however, something might be done for the overcrowding of native servants in cantonments. The ordinary staff of servants attached to a European household is a big one, but when two or three officers share one house, what with three orderlies and three sets of syces and grass cuts, the overcrowding becomes acute. Often whole families occupy only one hut. Servants are constantly suffering from fever and mosquitos love their dark ill-ventilated houses, and there is nothing to prevent the anopheles (which generally breed in a pond in a corner of the compound) from carrying fever to every inmate of the household. I think a bye law to prevent overcrowding among servants in cantonments would do much good. Servants' houses are not expensive to put up, and the landlord could be compelled to build as many as necessary. The Cantonment Magistrate could keep a list of the number of servants' houses, and the number of servants allowed in each compound, and if a return from each tenant was sent in every month of every person living in his compound a check could easily be kept. All native servants who enter the houses of and attend on Europeans should live under exceptionally good sanitary conditions. If in England they think it necessary to legislate for the cubic air space on board a coal boat, surely it is worth our while to do something for our native servants, and I think a bye-law in all cantonments on this subject would do some good.

Another measure I should like to advocate for cantonments is the provision of gauze doors and windows for the barracks of European troops. About the great value of mosquito curtains as a prophylactic measure there is no question. It is the most valuable precaution we have. Investigators can go with impunity into the most malarial jungles of Africa, if they have mosquito curtains, whereas without them, it is almost certain death. It is obviously quite impossible that the native population should provide themselves with mosquito curtains, but this advantage might well be extended to European soldiers. As I have said before

his cost to the State is by no means a small item, and the provision of gauze doors and windows to his barracks would not be a very heavy expenditure. The anopheles, it is stated, seldom bite men, except when asleep, so that the European soldier sleeping under an electric *punka* and protected by gauze windows and doors should stand a very good chance of escaping infection. This is such a practical method that it seems to me well worthy of trial, and I beg to suggest to the Conference that Government might be asked to supply, as an experiment, gauze doors and windows to the barracks of one of two stations in India, such as Rawal Pindi or Peshawar in order to test their prophylactic value.

Another prophylactic measure which I believe has not yet been tried in India, is the fumigation of rooms and houses. This I wish to advocate on account of some recent experiments by Dr. Rosenau, Director of the State Hygienic Laboratory at Washington. State Bulletin No. 6 of September 1901 published by the Government Press details his experiments. He has found that sulphur dioxide, although as you know a weak bacteriocidal agent (especially when dry) yet is a powerful insecticide even in very dilute atmospheres. Dr. Rosenau among other experiments burnt 6 ozs of sulphur in a room of 500 cubic feet capacity and in one hour all the mosquitos were dead, although their cage was wrapped round with four layers of towelling. The application of this prophylactic measure is of course very limited, for unless you destroy the anopheles pools the insects will continue to prevail. But if you can first find the pools and then destroy them, sulphur fumigation will prove a very valuable adjunct. For the fully developed insect, as you know, may continue to live for many days in dark overcrowded native houses, even after his breeding places have been destroyed. This measure I think might be especially valuable in dealing with cooke sheds in Assam, with workmen's quarters in Calcutta or in native regimental lines. It is especially suitable in India, as not only do the natives view it with approval, but it is easily applicable to their small ill ventilated rooms. And I think it is well worthy of a more extended trial. There is no doubt, too, that if a private house is badly infected with mosquitos, it could be rendered considerably freer, if the people were to turn out all their goods and thoroughly disinfect the rooms with sulphur, but this is a method of domestic prophylaxis with which I am not at present dealing.

Quinining the community has, as you know, been strongly advocated by Koch as the most powerful prophylactic measure we have. But the practical possibilities of quinning the densely crowded cities of India is obvious. I think, however, the general use of quinine could be much more pushed than it is at present.

(1) For instance at many dispensaries a patient has to attend daily for one dose of quinine perhaps walking a mile or two, if it was a London Hospital, he would get a bottle of medicine to take away with him to last several days. But the Indian patient has to come daily for it, in order that his presence may augment the daily attendance book. I think it would encourage the prophylactic influence of quinine, if medical subordinates might be allowed, or even ordered, to give a bottle of quinine mixture to poor patients to take away with them if they want it.

(2) Secondly, every branch dispensary ought to have a very full supply of quinine at the beginning of the rains. If a return showing the exact amount of quinine in stock was sent from every dispensary on June 1st, it would enable authorities to see that sufficient quinine was being supplied. Well and nearly all authorities now agree that small doses of quinine are of no avail whether as a curative or prophylactic measure. And there is no doubt that, if the supply of quinine to a dispensary is a small one, the medical subordinate uses it with a sparing hand.

(3) Again, the amount of money spent on quinine in a civil district always seems to me very small considering the general malarious nature of the country. It would be interesting and instructive to know the exact amount which each municipality spends per annum on quinine at its charitable dispensary. If the amount spent seems small, such municipalities might be encouraged to increase it.

Although education is scarcely a prophylactic measure, yet there is no doubt that without its assistance we shall do very little. Minor insanitary defects, as pools of water, which up till now have scarcely been noticed, will in the future be considered the worse of sanitary evils. The more public opinion is educated on malaria and its causes, and the more people learn to associate malaria with mosquitos and pools of water, the more active and thorough will be our prophylactic measures. Private persons are generally very willing to remedy defects which threaten the safety of their homes, if they are only shown what to do. And municipal boards are always ready to receive advice on sanitary measures and to act on this, if they have the money. In Madras, I hear, the circulars on the prevention of malaria have already been issued to all municipal councils, but I have not had an opportunity to see one. I hear similar circulars are to be sent to every municipality in India. This diffusion of knowledge is the best aid we can have, and these circulars, backed up by a knowledge of local conditions, will be sure to bring about many useful sanitary improvements.

(2) The education of the more advanced scholars in native schools on the subject of malaria is also a method well worthy of encouragement, and would in the future bear good fruit. Something more than a leaflet would be necessary and a chapter containing all the essential facts in the life history of the mosquito, and the principles of prophylactic measures might well be added to the small sanitary primer, which is in use in Indian schools. I beg to suggest to the Conference that Government be asked to introduce such a course of elementary instruction at native schools.

(3) Again I see no reason why every medical subordinate should not be able to make blood films, and prepare specimens, and also to identify the different varieties of parasites, and also be able to catch and identify the anopheles larvæ. Major Buchanan has shown us that the necessary technique and knowledge can well be grasped by an intelligent native. It would very materially help Civil Surgeons and Health Officers, if their subordinates could search out anopheles pools near infected houses or barracks, and if they could save them the necessary prolonged labour of reaching through several blood specimens. I beg to suggest to the Conference that Government might be asked to start special classes for this instruction at all medical schools in India so that the subordinates of the future would have a thorough education in this respect.

Lastly, I should like to say a word about legislation and malarial prophylaxis or how Government may best help us in the fight. No doubt each medical officer can do much by his own influence and advice, but there are certain measures which cannot be carried out without the help of Government. I have mentioned some of these in the course of this paper. I have also collected several of these recommendations together on a sheet which I submit to the Conference for amendments and additions and for some final recommendations to Government, and I beg to suggest that a sub-committee be elected among us to consider this also.

In conclusion, I can only say that malarial prophylaxis is a very big subject—too large in fact, and with too many aspects, to be treated in a single paper. I feel I have only touched very inadequately on one or two points, but I have tried to deal especially with those in which we can do something really practical. After all it is, in my opinion, very largely a matter of sanitation. The lower in the social scale we go, the worse are the

sanitary conditions we meet, the more prevalent is the malaria, and the more virulent is its type. If we improve the ventilation of native houses, the less anophelæ will we find in them. If we relieve the overcrowding in the houses of our native cities, the fewer victims will the mosquito find. If we improve the surface drainage of towns, the fewer opportunities for their development will there be. The essential principles lie in sanitation, backed up by some special knowledge of the mosquito, and a few exceptional precautions. Nuttall has shown that anophelæ mosquitos are by no means extinct in England, and it is more than probable that malaria has become extinct in England very largely from the improved sanitary conditions of our towns and villages, and also the better housing of the poorer classes. And it is because the sanitary surroundings of people living in Indian towns and villages is still so far from perfect, that the death-rates from malaria are still so high.

The impossibility of quinnising the whole community, the presence of rice fields, the abundance of anophelæ pools are facts which need not daunt us. Much has already been done by Italian sanitarians, and Ross reports that he has met with considerable success in Sierra Leone. If anyone doubts the utility or ultimate value of our efforts, we can already point to these results. It is time in India that we too tried something definite. It wants, I think, not only that all medical men should be in earnest about it, but that they should persuade all local authorities and residents to be in earnest too. That we should convince them that it is no longer a theory at which they can scoff, but definite facts in the causation of a disease which saps the strength and wealth of our Indian Empire.

COCAINE AS AN INTOXICANT AND ITS DEMORALIZING EFFECTS

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BESIDES the use of cocaine hydrochlorate as a therapeutic agent, its consumption as a drug for intoxication is so great in the Calcutta market, that unless stringent measures be forthwith adopted to control its sales, I have reason to fear that its demoralizing effects will soon spread amongst the juvenile members of respectable families, and in no distant date special asylums will be required for the safety and treatment of cocaine inebriates.

Fortunately, however, the cocaine habit is at present confined to a class of people who are more or less addicted to opium, ganja or alcohol, but we occasionally come across cases where the victims have contracted the habit from the very beginning. We do not know how the people of Calcutta have derived their knowledge of the intoxicating property of a costly drug which has hitherto been only handled by medical men, but facts collected tend to show that they have got it from then Bhagalpore brethren where cocaine has become a social necessity amongst the less thoughtful class of men. The inebriates say that the hilarity it produces is almost instantaneous and is followed by no deleterious results. The noviciates, as a rule, take it quite secretly during the early hours of the night, whilst confirmed and veteran eaters take it during all hours of the day. It is generally taken

in the form of tabloids or powder and chewed with betel leaves (*pan*, piper betel), and slaked lime.

Unlike ganja or bhang it requires no special preparation. The habit once acquired cannot be easily given up. I took special interest in the treatment of a penitent who brought ruin upon himself and his family by contracting cocaine habit. The symptoms watched and recorded in this case as well as the reports of other cases given below, will, I trust, be of some interest to the members of our profession. The first symptom experienced by the victim after he has taken a dose of cocaine is loss of sensation in the tongue and lips, followed by dryness of the mouth and fauces. A thermometer placed under the tongue does not indicate any abnormal rise of temperature. The approach of the so-called hilarity is announced by a feeling of heaviness of the head, throbbing of arteries of the neck and palpitation of the heart. Pulse becomes slightly full and quick, but never exceeds 110. At this stage the inebriate would like to be left alone, he would firmly close his lips and avoid talking to friends, lest in his attempt to do so, the saliva flowed out of his mouth. His ears become hot and red, whilst his cheeks become pale, the tip of the nose becomes cold. Perspiration soon breaks out on the forehead and neck, and the indication of the maximum amount of hilarity is marked by the coldness of the finger ends and dilatation of the pupils. This stage lasts from 30 to 45 minutes, after which the victim longs for a fresh dose, and unless he gets it then and there he feels lifeless and dejected. This depression of spirits is more imaginary than real, for I have not noticed any fall of temperature or slowness of the pulse, but the respiration becomes slightly hurried. The tongue and lips now become moist again, and perspiration on the forehead ceases altogether, but the pupils remain dilated. The physiological effects of cocaine are most marked upon the noviciates. The teeth and tongue of the confirmed cocaine eaters turn jet black, and this is probably due to the chemical change produced by the action of lime and saliva upon cocaine.

The tendency for increasing the dose of the daily ration becomes irresistibly great, and the penitent whose history I have just given told me that he increased his dose from one to twelve grains within the short space of a month. Unlike opium, it brings on insomnia and anorexia, soon followed by dyspepsia and diarrhoea. The dyspepsia of a cocaine inebriate is very obstinate and does not readily yield to treatment. Its prolonged use brings on deafness, and the confirmed cocaine inebriates are slightly deaf. The quantity of urine is diminished, but in none of my cases albumen was detected. Delusions and hallucinations often disturb the mental tranquility of the inebriates and gradually make them most miserable. In some cases cocaine brings on acute mania, which is not amenable to treat-

ment Amongst numerous other cases I select the following few where the deleterious effects of cocaine upon the system were most marked

Case No 1 —Lal Behary Misser, promising young boy, *æt* 20, very respectably connected, resident of Cross Street, fell into bad company and contracted the habit of taking opium and blang in their various forms. His friends remonstrated with his conduct, and he gave up his opium habit altogether and took a fancy to try the mirth giving effect of cocaine. A hospitable friend of his offered him a grain, and its effect, as the young man said, was simply pleasant.

The next day he called at his friend's place and asked for another grain. His obliging friend complied with his request forthwith, and further advised him gratuitously to take it daily until he picked up flesh and strength, which he, as he looked by his appearance, wanted badly. The foolish boy began to take two grains twice daily, and he went on increasing the dose until it was raised to thirty grains a day. The demoralizing effect of the drug was soon marked upon him, he would now studiously avoid society and try to keep himself confined to a room. He was honest and truthful before, but now he became a liar and a pilferer. He was fair and strong, but he soon became weak and dark. He suffered very badly from insomnia, and hypnotics failed to give him rest and sleep. He would take nothing for his food except milk in very small quantities. His heart beat was strong, but his hands and feet were cold and clammy. His pupils were dilated, and the conjunctivæ looked pale and bloodless, his tongue and teeth were black. Obstinate diarrhoea supervened and carried him off. He had convulsions before death.

Case No 2 —Saccoram Bhut, *æt* 45, a Sanscrit scholar and versed in Hindoo philosophy and an inmate of premises in Burtolla Street, consulted me for insomnia, the result of cocaine habit. As a priest, he said, he had to fast at least three days in a week. About a year ago he had an occasion to go to Bhagalpore, where he met a learned pundit, who advised him to take cocaine, which possessed remarkable power of sustaining vigour and life without food and enduring fatigue of all kinds. This induced him to take cocaine. At the commencement he derived benefit from its use. Thinking he might further improve his health, he raised the dose from one to three grains.

He felt weak and giddy and consulted another cocaine eater, who advised him to take it twice daily, and in pretty large doses. He raised the dose to five grains, which he took regularly for three months when the unpleasant symptoms began to make their appearance one after another. He soon felt himself dispirited and miserable, he suffered from anorexia and obstinate insomnia, he lost his retentive power, and became dull and stupid. I took up his case, and strongly advised him to give up his cocaine habit altogether. He promised to abide by my instructions. After a few weeks he returned to me again and asked for a harmless drug which would act as a substitute for cocaine as he regretted he could not resist the temptation of using cocaine, although, I knew well he was poisoning himself. I noted down the following symptoms —

Temperature 97°F
Pulse 110 soft and compressible
Heart sounds feeble, regular, no bruit
Tongue and teeth jet black
Sight impaired, lachrymation, photophobia, pupils dilated, but respond to light.
Considerable wasting of the muscles of the body

I gave him twenty grains of sulphonal to take with milk at bedtime. The next day he came and reported that he slept a little and felt easy. I gave him another dose, and the effect was delightful. Now I hear he takes sulphonal daily and has kept up his usual dose of cocaine. He has given up his pastoral duties and mixes freely with low class people. He lives entirely upon the charity of his neighbours.

Case No 3 —Ghasy Ahyr, *æt* 45, a resident of Hanspooker Lane, has been using cocaine since the last eighteen months. He was subject to facial neuralgia and had several of his teeth extracted. He was advised by a cocaine eater to chew cocaine with betel leaf, and he did it with excellent results. This induced him to use it daily and acquire a habit. At present he takes eight grains twice daily. He wanted to discontinue its use as he had no further neuralgia, and the process of cure was very expensive, but he could not do it. The following symptoms were recorded —Pulse 100, intermittent. Respiration 18. Temperature 97°F. Pupils dilated. General weakness of the body, anorexia, insomnia, constipation present, mind clear, occasional vertigo and headache, tongue moist and clear, slightly tinged black, has lost all his virile power.

To ascertain whether the craving of cocaine inebriates was more imaginary than real I gave him eight grains of sulphonal, telling him that it was cocaine of the very best quality and more mirth giving than the inferior kind of bazar cocaine and did not require any special preparation to produce the desired effect. He called again the next morning and reported that the new drug had no effect upon him and he had to take his bazar cocaine which gave him instant relief and picked him up in no time. Poor fellow! he sells his goods and chattels to procure his daily ration.

Case No 4 —Sunker Lall Burman, *æt* 52, a resident of Khajoor toll, Upper Chitpore Road, is a confirmed opium eater, used to take 30 grains of crude opium twice daily, but has now reduced his daily ration to ten grains. Has contracted cocaine habit since the last two years, he first took it for relief of pain which he was subject to. From two grains he has increased his daily dose to only a few grains less than two drams. He prefers to take it in crystal form, says he can take in my presence two drams with perfect safety. He gets his supply from a *pinwalla* (betel leaf vendor), whom he pays Rs 2 8 0 every day. When he cannot procure money by honest means he robs his wife and children of their jewellery. He was stout and strong before, but now looks pale, thin, anæmic. Constantly feels a dull heavy pain on the head, and a sense of heat all over the body, perspires freely and suffers from insomnia, for which he seeks my advice. Whilst giving history of his case he suddenly stood up and looked bewildered, he walked to and fro for a few minutes, and then sat down. He remained seated for about 20 minutes, and then hastened to hide himself behind an almirah which stood near him. His friends who accompanied him stated that they noticed this change in him since a fortnight. I closely watched his attitude and did not allow anybody to disturb his movements. He soon came out and sat quietly on the floor. When questioned he replied that for the last ten or twelve days an evil spirit has taken possession of him, and when he forgets to pay him his due he gets annoyed and tries to kill him. He remained with me for more than an hour and a half and then left the place. His pupils were slightly dilated, pulse 86, good, respiration normal, tongue dark black, pretty moist, cannot distinguish salt from sugar, muscles of the body flabby. Tendon reflexes diminished. His urine was analysed, but nothing abnormal was detected.

Case No 5 —Bhajan Lall Misser, *æt* 33, resident of 2, Kanulalul's Lane, using cocaine in 30 grain doses twice daily since the last twelve months. He gets his supply from one Budree Khotla, from dispensaries, and from one Mohesh Babu of Chorebagan, who keeps a dispensary at No 50 or 51, Mooktaram Babu's Street. He was stout before, but has now lost his weight, suffers from anorexia, has not taken any food since the last four days, says he can tolerate fatigue very well, no constipation, absolute insomnia, disturbs his neighbours during night, talks too much, although there is link in his conversation. Pulse 100, intermittent and feeble. Respiration normal. Hepatic dulness, slightly increased. Tongue black, pupils normal. He has got his family, has lost all carnal appetite. At the commencement he was

told by his friends that cocaine was a powerful aphrodisiac, but experience has taught him otherwise. He was a broker before, and one time enjoyed the confidence of his constituents. He has now brought ruin upon himself. He takes cocaine daily about Rs 2, and this amount he candidly confesses he raises by means unfair. He cannot give up the cocaine habit, although he is fully aware of its baneful results.

Case No 6—Issuf, a Mahomedan boy, *æt* 12, fell into bad company and contracted cocaine habit. He can now take 12 grains during 24 hours. He came to see me because he heard from several people that I would give him a phial of cocaine if he could take 5 rutties (10 grams) of cocaine in my presence. He gets his supply from a panwallah, who has now raised his rates owing to the sale being restricted by Sircar (Government) who ought not to be so hard upon poor people. Has got cocaine in his mouth, and therefore does not like to answer questions. Says he cannot prove himself a fool by allowing the mirth giving saliva to dribble out of his mouth. Declines to give name of his father and brothers. Pulse excited, intermittent, temperature 99° F. Respiration 20. Complains of severe headache and refuses to take any medicine lest it deteriorates the effects of cocaine. Says one Ibrahim has taught him to take cocaine. Ibrahim is his class mate. Declines to give the name of the school he belongs to.

Case No 7—Brojomohon Khetry, *æt* 37, a respectable Hindoo gentleman of 129, Harrison Road, contracted the habit of taking cocaine for the improvement of his virile power. He was an opium eater before, but gave up his opium habit altogether since he became acquainted with the charming effects of cocaine. He gets his supply from his own medical adviser. From a very small dose of two grains he has raised it to 30 grains now, and says he could not resist the temptation of increasing it still further. He consulted me for insomnia, but begged me not to curtail his ration of cocaine. I examined him carefully and noted the following symptoms—Pulse 110, weak and small. Temperature 97.5 F. Respiration 18. Tongue and teeth black. Pupils slightly dilated. Lungs healthy, heart sounds normal, liver slightly contracted, no jaundice, spleen normal, urine scanty, but nothing abnormal was detected, has lost all his carnal appetite. It took me about 20 minutes to examine him, after which he became restless and asked me to leave him forthwith as further delay would likely prove fatal to him. Saying this he sat up and brought out his cocaine phial and bowl in which he kept his betel leaves and slaked lime and commenced taking his blessed cocaine. He took out one silver director, put its spoon end into his phial and brought out a small quantity, *ery* about one grain, put it on the roof of his tongue, and then with the other end he took out a small quantity of lime, spread it on the betel leaf and putting it in his mouth began to chew it, with cocaine first put into the mouth. He then firmly closed his lips, the upper one lapped the lower lip, he remained silent for about 15 minutes, and then took out another grain of cocaine and strictly followed the process observed before. He went on doing this when I left his room. His runt said that he would not move from his place where he sat until he had taken his full ration. His father informed me that only another month he had to pay Rs 90 to his doctor for the supply of cocaine.

Case No 8—Kany Lal Tombules, *æt* 22, a shopkeeper at No 20, Brustola Street, has been using cocaine as a luxury since the last eight months. The following were the changes noted in his general constitution. He was very healthy before, does not remember suffering from any disease ever since his boyhood. Could work, as he said, like a gruit, but ever since he has contracted the habit of taking cocaine he has become dull and almost stupid, vertigo, insomnia of the worst form, has made him peculiarly nervous. He is not half so stout as he was before. He is fully aware of the evil consequences of his nasty habit, but cannot help it. From one grain dose he has increased it to eight grains.

Pulse 106, slightly intermittent, respiration normal, does not take any other narcotic. Tongue moist and perfectly clean, he deals in betel leaves, and is himself a vendor of cocaine. He says he knows the process by which he and his fellow shop keepers can evade punishment.

Case No 9—A healthy looking young Hindoo girl, *æt* 16, contracted the habit of cocaine under peculiar circumstances. An elderly woman living in the same house, advised her to take cocaine to get rid of dysmenorrhea which she was subject to. She also cited instances where cocaine proved a sovereign remedy in removing sterility. The foolish girl followed her advice and took cocaine every day clandestinely in one grain dose for six weeks. She then increased the dose of her daily ration, and one day she took ten grains. Half an hour after she had taken the dose she complained of a choking sensation and soon became unconscious. At this stage I was summoned to see her. The patient had all the symptoms of hysteria, and I prescribed for her accordingly. When I was about to leave the place the patient had a fit of convulsions, and the anxious father invited me to notice it. She had twitchings of the muscles of the face and general tremor of the body, the fit lasted for nearly three minutes, and was then followed by another after a pause of about ten minutes. It lasted for about three minutes and then left her altogether. Her pulse 92 pretty good, temperature 99 F, respiration shallow 18, tongue, lips and mouth dry. Pupils slightly dilated. The dryness of the mouth made me a little inquisitive, and I enquired whether she had bhang (leaves of *Cannabis Indica*), and the reply I received was in the negative. My next question was whether she had similar kinds of fit before, and the reply was also in the negative. I examined her pulse again and found it to be soft and quiet. Profuse perspiration soon broke out on the forehead and neck, and then gradually over the trunk and extremities. Her condition did not improve much, and she remained unconscious till the next morning. At about 10 A.M. the following morning marked improvement was noticed in her general condition. She could now understand questions and answer them correctly. Her bladder was full and had to be relieved by catheter. Her pulse and respiration improved, and she appeared a different person altogether. At about 1 o'clock in the afternoon she became very cross and wanted to go to the adjoining room, where she had her box containing betel leaves and spices. As her friends did not allow her to move she became very irritable. At this time the elderly woman came up and offered her a prepared betel which she chewed and became absolutely quiet. During evening she became again irritable, and she herself sent for the old woman who responded to her call and gave her another prepared betel which instantly cooled her down. This roused suspicion in my mind, and next day when she became worse and wanted to see the old woman her movements were closely watched. Her husband under instructions from me received the prepared betel and made it over to me. On opening the folded betel leaf cocaine was discovered, and then on being questioned the girl made a clean breast of the whole thing and further said that there were three more girls under the same roof who were taking cocaine in pretty large doses. The enormity of the mischief which cocaine has done and is likely to do can be better imagined than described. The old woman was turned out, and the young ladies have ultimately recovered, but one of them has become a confirmed opium eater.

Case No 10—Johurmali, *æt* 21, a promising young Brahmin boy, living with his relatives in Shamabar's Lane, suffered from spermatorrhea, and on the advice of a quack contracted cocaine habit. He commenced it from a very small dose and gradually raised it to half a dram. The pernicious effect of the drug was most vividly marked upon his countenance. He was fair and pretty healthy before, but under the influence of cocaine he became dark and greatly emaciated. He suffered from obstinate dyspepsia and

insomnia for which he sought my advice. He confessed, he tried, but failed to reduce his daily ration, and at last became desperate and determined to resign to his fate. His brother who was his guardian confined him to a room in his house and stopped his cocaine altogether. The boy sold off his wearing apparel to corrupt the domestic servants to have his regular supply through their instrumentality. He was ultimately turned out of the house. He lived for some time upon the charity of friends. He lost all his energy and intelligence. He suffered from obstinate diarrhoea which did not yield to medicine. I examined him and was most disagreeably surprised to notice the rapid wasting of his body. He was reduced to a skeleton, his voice was hoarse, pulse soft and quick, heart sounds extremely feeble. Respiration 32, hurried, no rales or rhonchi were detected. Conjunctiva pale, and pupils widely dilated, suffered from vertigo and noises in the ears. Slightly deaf, no inclination for any kind of food. He still takes cocaine and says his generous relatives out of compassion supply him with funds. Every attempt was made to prop him up, but none proved effective. The unfortunate boy eventually died.

Case No 11—Hargovind, *et* 29, resident of Shih Thakoor's Lane, an intelligent man, lost his situation by contracting cocaine habit. He has been addicted to its use since the last five months. Can now take half a dram of cocaine without feeling any inconvenience. Says he can endure fatigue very well, and walk for miles without fatigue or any kind of food or drink. Pulse 100 intermittent, tongue jet black. Says the hilarity of cocaine is only temporary and is not worth the expense and trouble. To quote his own words 'to eat cocaine is to court misery.' He repents for his folly, and cannot resist temptation. He cannot govern his ideas and forgets the link of his conversation. Dread of being chased by police maddens him. Whilst loitering on the streets perchance he finds any white powder sprinkle over them he would carefully pick it up and put over his tongue and then throw it down saying it is not the thing he wanted. He would pluck flowers from plants and put them on his head. Poor fellow! he now lives entirely upon the charity of others.

Case No 12—Doorga, *et* 27, a healthy Marwara gentleman, of Bhagalpore, was placed under my treatment for acute mania, the result of cocaine which the patient indulged to excess. From history it was found that previously he was addicted to ganja smoking. By advice of his friends he gave up ganja and took fancy to cocaine, which at one time was considered a luxury amongst the rising men of Bhagalpore. He commenced taking cocaine in 1 grain doses, but soon raised it to a little less than a dram. He now takes daily a phial worth Rs 2 8 0. His friends say that he cannot curtail his dose as the attempt has on more than one occasion been followed by disastrous results. The patient grew worse and became more violent and furious. A big dose of cocaine given at this stage quietened the symptoms at once. His sense of taste was absolutely dull, and he would not easily distinguish salt from sugar, but it was most acute in detecting the adulteration of cocaine, which was at one time being intentionally done by his friends to curtail the dose. He talks incoherently and becomes violent when contradicted. I stayed with him for nearly an hour, and his attitude towards me was very friendly. His best friends are those who can keep him well supplied with cocaine and betel leaves. He says that the mirth giving power of cocaine is simply charming. He believes that an evil spirit has taken possession of him, and says that nothing short of sacrificing half a dozen of men would extricate him from his clutches. I advised his friends to keep him under restraint. His pulse was 86 good, respiration normal, pupils widely dilated, temperature normal. I went to see him on the following day and he took about ten grains of cocaine in my presence, and I noticed the following changes. His forehead became hot, tongue and lips dry, temperature 99°F, pulse 86.

He remained absolutely silent, and refused to give answers to questions. He was very irritable before, but became absolutely quiet. His constant and favourite attendant told me that he would remain for nearly half an hour in that attitude and then become incoherent again. As his friends were not prepared to disallow cocaine, I could not take up his case. It is now nearly 12 months since I saw him last, and I am sorry to hear that he is just as bad as before.

On analysing these cases we find that the action of cocaine upon the nerve centres is slight stimulation at the commencement, but the effect is only temporary, lasting from 15 to 20 minutes, and is then followed by a feeling of depression which gradually passes into complete lethargy and inertia. The inhibitory power is gradually lessened. The virile power is lost. Its action upon the heart and vascular system is depressant. In all of my cases irregularity in rhythmic action of the heart was noticed, the circulation becomes languid. Loss of appetite and failure of digestive power were notably marked. Emaciation results from want of nutrition. The craving for increased doses becomes irresistibly great, secretions of urine are greatly lessened, and the effete materials are generally retained. Constant supply of impure blood disturbs the natural functions of the brain causing insomnia and loss of memory. Persistent functional disturbance gradually brings on structural changes, and the inebriates suffer from delusion, hallucination and mental aberration. So long as the inebriate takes cocaine in well regulated doses they do not manifest toxic symptoms. Unlike opium, cocaine eaters soon become useless members of society, and at times their own lives become a burden.

To attempt to break up cocaine habit by substituting sulphonal or chloral is to induce the inebriates to try the effects of both. The only remedy to bring round the inebriates lies in locking them up in asylums and stopping cocaine altogether. My friend Babo Brojo Lal Dey, Superintendent of the Metropolitan Institution and College, informs me that he knows instances where students of tender age and belonging to private schools have addicted themselves to cocaine, and become so demoralized that they were ultimately expelled from the institution. He also mentioned that two brothers, Dharendra and Ganendra, aged 14 and 18 respectively, and belonging to a very respectable Hindoo family, contracted the cocaine habit and indulged themselves to excess. Both of them became insane, the prudent father locked them up and stopped cocaine altogether. In course of time they recovered and have again joined their class. Information has also reached me that women dealing in fancy goods and who have access into private houses clandestinely carry cocaine and sell it to foolish girls who take it in very small doses with betel leaves. The time has come when measures ought to be taken to put a stop to the illicit sale of cocaine.

THE THERAPEUTICS OF SEMI-CARPUS ANACARDIUM.

(Dhobi's Nut)

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The marking nut tree (Anacardiaceae)

Syn. *Semi-Carpus Latifolius*

Vernacular Names—Bhullataka, Arushkara—Sanskrit.

Bhola	Bengali.
Bhilawan	Hindi.
Boladia	Arabic.
Bilader	Persian.

For a description of this tree and its fruit the reader is referred to Watt's Economic Dictionary, p 1041

PHYSIOLOGICAL ACTION AND USES OF SEMI CARPUS ANACARDIUM

External—The acrid juice of the fruits and the oil are powerful vesicants and irritants. The eschars are usually black, sometimes pustular. The vesicles appear usually within twelve hours of the application of the oil or the juice and multiply for some two or three days, the fluid from the broken vesicles causing a fresh crop on any part of the body coming in contact with the affected site. Malingerers sometimes use it to deceive doctors.

The oil has very powerful antiseptic properties, but is too strong an irritant to be used medicinally for any such purpose. Wooden posts are sometimes painted with the oil to protect them from white ants.

The pain caused by the application of the oil is simply intolerable. Professor Basnier has also noticed painful micturition after the application of the oil over a large area. The urine in such cases is reddish brown and bloody, and there are sometimes painful stools.

Exposure to the vapour of *S. Anacardium* causes erythematous eruptions accompanied by severe burning and itching in most cases.

The oil mitigated with butter or ghee (a drachm of the oil to four ounces of ghee) is used in scaly skin eruptions, e.g., psoriasis, etc. The affected part becomes softened with marked rapidity and a normal condition returns. The strength may be varied according to the indications.

This application also does good in leucoderma. Sometimes the fruits are fried in mustard oil, and the oil is used for this purpose. The leucodermic spots show foci of fresh deposition of pigments, and after a prolonged use distinct change of colour is generally noticed.

For stimulating indolent ulcers, a compound oil of which anacardium is one of the constituents is sometimes used with success. (See the directions for preparing this oil under "Forms of administration" below.)

Internal Alimentary tract—The mouth soon becomes dry, even with powerful medicinal doses. The oil is irritant to the whole of the digestive tract in big doses. In medicinal doses, it increases appetite and powerfully increases the secretions, the stools being tinged deep yellow in the majority of cases. Partly by its own direct stimulating action and partly by its powerful cholagogue action, it often acts as a purgative also, especially in men of neurotic disposition. It has a special influence on the hæmorrhoidal veins and the lower part of the rectum, in some cases producing itchiness about the anus, and sometimes the mucocutaneous surface around the anus is found to be hanging down somewhat loose, especially so if affected with piles. The secretion of saliva is lessened, and thirst is increased. Owing to the irritant properties of the oil, this is invariably administered internally by Mahomedan and Hindu physicians, mixed with butter, milk and ghee or some other oily fluid. This precaution is essential.

The kernel of this and of *S. Occidentale* has no irritant properties at all. It tastes like almonds and is a good nutritive food. In fact, it is used in the preparation of sweetmeats in some districts of India. The peduncles also are pulpy and sweet when the fruits are ripe. They are eaten without danger.

As a general alterative it is often used to increase appetite among other purposes. The power of digesting fats is said to be enormously increased. It is also a powerful carminative.

S. Anacardium has been recommended for piles in Sanskrit books, but, in my experience, it apparently aggravates the trouble. The kernel of the fruit, which is only a food containing much oil, can be, however, used without danger. It produces some good, perhaps, by its slight laxative effect.

The fruits are said to have vermifuge properties, but I have never used it for this purpose.

Liver and spleen—I have already mentioned that *S. Anacardium* is a powerful phlogagogue. In jaundice it does good, but it is to be used with caution. Excessive thirst and heat in the system and burning sensation of the hands and feet are to be regarded as contraindication in a case of jaundice. It is beneficial in a catarrhal condition and partial obstruction of the bile passages.

In chronic enlargement of spleen it can be used with advantage when there is no hepatic complication of any marked degree and fever.

Circulatory system—*S. Anacardium* is a good cardiac tonic. Under its influence many neurotic cardiac troubles are noticed to subside in a short time. The rate of the heart beat is usually increased.

Respiratory system—The drug is a general respiratory stimulant. It has been tried by me with success in several cases of pneumonia in the Campbell Hospital as well as in private practice. The condition generally improves within three or four days—an ounce of the decoction (strength—two drachms of the bruised fruits to the ounce)—once or sometimes twice a day having been used.

If a fruit is heated in the flame of a lamp and a drop of the oil allowed to drop in a pint and a half of milk, the milk can be used successfully in relaxation of the uvula and cough, especially in children. This use is current in Madras and some other places. The potency of the drug in asthma is very remarkable. The drug not only relieves the spasmodic attacks, but also tends to cure the disease by prolonged use. A course of treatment with the drug for a month or so, in winter, is highly beneficial for asthmatics.

Nervous system—In cases of mild poisoning, *S. Anacardium* causes mental disturbances, illusions, loss of memory and drowsiness. In medicinal doses no such symptoms are noticed. Usually an increase of mental vigour follows a prolonged use of the drug in suitable doses. It has a decided sedative action on the cord, as it so markedly relieves spasms. It is a stimulant to the sexual centres however, and is used as an aphrodisiac, especially by the Mahomedan hakeems.

S. Anacardium has a very pronounced action in subduing all forms of neuritis. In peripheral neuritis, including beri beri, I have used the decoction with milk and ghee in gradually increasing doses with very satisfactory results. In 24 cases I tried the drug, and half of them recovered within a month. The others improved considerably, though I did not get the opportunity of observing them till complete recovery. I have also used the decoction in the peripheral neuritis of chronic arsenical poisoning with excellent success.

In sciatica, the drug often acts like a charm. The patients feel relieved usually within 48 hours. A chronic case of sciatica of eight months' duration and with apparent scoliosis recovered completely in a month, with the administration of the decoction in increasing doses. A case of facial paralysis of two months' standing and with well marked symptoms was completely cured by a friend of mine in private practice under a course of twenty five days' treatment with the decoction.

The use of the drug in paralysis is especially noteworthy. I have found the drug efficacious in both the spasmodic and flaccid varieties of the disease. Several cases of paraplegia spastic and simple, and many others of hemiplegia with secondary rigidity have been successfully treated by us with the decoction.

Genito urinary system—*S. Anacardium* in physiological doses decreases the quantity of urine, which is generally very high coloured and sometimes quite bloody. It produces itching and burning of the urethra, frequent desire to pass water, and often with some difficulty in micturition. In medicinal doses it should not produce any urinary trouble. Difficulty in passing water is one of the signs of over-medication with this drug.

I have already noted the aphrodisiac properties of Anacardium. I have now to say that it is also one of the most powerful emmenagogues and produces good effects in dysmenorrhoea. In inflammations around the uterus (pelvic cellulitis and peritonitis) it has been used with much benefit.

The oil of *S. Anacardium* is a powerful abortifacient. It has been applied locally for criminal purposes.

Skin—*S. Anacardium* is a powerful diaphoretic. It is very useful in scaly skin diseases.

General Disorders—I think this remedy should have extensive trial in fevers complicated with nervous symptoms. Two cases of cerebro spinal meningitis have been actually cured in the Campbell Hospital by treating them with *S. Anacardium*.

In rheumatic and gouty complaints *S. Anacardium* is one of the best specifics I ever came across. I had occasion to use it several times in acute gouty troubles where the effect was simply wonderful. The agonizing pain and tenderness, which had yielded to no other treatment, passed away in 24 hours, threatening inflammation subsided in no time, and within two or three days the patients were doing all right.

It is believed by the Indians that if the drug be taken internally in small but gradually increasing doses in the winter, it makes one free from coughs and colds and senile degenerations. We have seen a man, now 108 years old, who has been using confection of the drug for many years during winter.

Modes of Administration—*S. Anacardium* is used in various forms. The kavirajes of this country usually rub the divided fruits of *S. Anacardium* with brick-dust in order to get rid of the oil. I do not think this is necessary, as we can eliminate the oil easily by straining the decoction through thick linen. The first and most handy way is the decoction.

I generally use the decoction in half an ounce doses to begin with and gradually increase the dose according to the tolerance of patient. When the desired effect is obtained, I begin to diminish the dose gradually.

The maximum dose of the decoction used by me was eight ounces in 24 hours, but a medical man using the drug for the first time should be very careful in watching the feelings of the patient, and should the drug be found to disagree in any way, it should be stopped at once. It is worth noting here that the gradual increase and decrease of the dose of a particular remedy is a characteristic feature of the Hindu system of medicine.

The restrictions to be observed by an individual taking the decoctions are the following—Walking in the sun, excess in sexual intercourse and excessive indulgence in nitrogenous food, food poor in fat, etc.

It is important to mention a singular fact of my observation. When a patient taking Anacardium, takes no salt and water (using plenty of ghee, milk, starchy saccharine food instead) he is often noticed to derive marked benefit within a very short time. This restriction is, however, not essential, but if the patient can obey it, he will be more than compensated for his privations.

When using the drug in obstinate cases, I think one should try to see this restriction enforced before one condemns the drug as useless.

(2) *The confection*—The next most common form of using Anacardium is a confection with milk and ghee—commonly known as "*Amrita bhallatakam*."

"Take eight seers of fully ripe fruits of *S. Anacardium* and rub them with brick dust for some hours and then wash off. Dry them in the open air and cut them into pieces.

Boil in four times (32 seers) their weight of water, until the water is reduced to eight seers. Strain the decoction and add to it, when cool, eight seers of milk. Boil again and reduce to one fourth. Strain again and boil with four seers of ghee, when the whole is of the consistency of a confection, sprinkle four seers of sugar over it and mix it well. When cool, the mass is to be

kept under a large heap of paddy or barley corn for seven days, when it will be ready for use."

Dose— $\frac{1}{2}$ to 2 tolahs (1 tolah = 3 drams and 12 grains approximately).

It is said that no restrictions need be obeyed when this form of the drug is used.

(3) *The Oil*—The third and somewhat dangerous form of administering the drug is the oil situated in the intercellular spaces between the two laminae of the seeds, it is ordered to be prepared in the following way—"Divide the fruits into pieces and put them into an iron vessel having a number of holes at the bottom.

Place a second iron vessel below this and apply heat to the sides and top of the upper vessel. The thick tarry oil will trickle down into the lower pot."

Dose of the oil—One or two minims with butter or cream, swallowed in a mass.

This oil is advised by Charaka to be taken with eight times its volume of honey and twice its volume of ghee. It is also suggested in that work, that the drug can be used in any suitable form, but always preferably with a bulk of bland starchy saccharine or oily things.

(4) I shall next cite some compound prescriptions containing the drug.

This and the following preparations are prescribed for paraplegia—

(I) *Compound decoction No 1*

Take of long pepper, root of the long pepper and *S. Anacardium* fruit—equal parts to make two tolahs altogether, and boil as before.

(II) The pulpy portion of the peduncles of ripe Anacardium fruits with sesamum seeds—one tolah of each sweetened to taste with sagarcandy—is very useful in piles.

(3) A compound confection containing sesamum seeds, chebulic myrobalsans and Anacardium fruits—equal parts, bruised and made into a paste with treacle—is useful in piles, asthma, bronchitis, anæmia and some fevers.

Season of Administration—Winter is the best season for the use of *S. Anacardium*. It being a very heating remedy, its dose cannot be pushed to any length in summer. Of course in suitable cases I have used it in every season.

Over medication with S. Anacardium. Symptoms—The first sign of over medication with this drug is excessive perspiration, great thirst and burning of the skin. Difficulty in micturition may be simultaneously noticed along with this or later on.

The urine becomes high coloured and scanty. Some observers have noticed that the urine is even tinged with blood, when the drug is used recklessly. Bowels become irritable and loose, and there may be much griping. If the drug is still continued, the patient often notices erythematous eruptions on different parts of the body. These eruptions are accompanied with severe itching and burning. In certain nervous subjects there may be drowsiness also, but this is somewhat rare.

An assistant of ours while exposed to the vapour behaved temporarily like a mad man. He began to laugh when there was no cause for laughter and could not understand well what was spoken to him. This was, however, a unique instance, for no other assistant ever showed such symptoms when they exposed themselves carelessly to the vapour. Our servants are always directed to anoint their body with cocoanut oil or some other bland fatty substance whenever they have to prepare the decoction in any large quantity. When this precaution is neglected, the rash is most likely to appear.

Treatment—With mild toxic symptoms it is often not necessary to stop the drug altogether, only a reduction of the dose being sufficient, but if there is any great difficulty of micturition or any rash, *S. Anacardium* should at once be omitted.

Several antidotes are used for the treatment of the toxic symptoms produced by this drug. These are the albumen of the cocoanut, sesamum seeds, the chebulic

myrobalan, and so forth I have obtained the best results by using the first antidote. The milky juice of the albumen of coconut sweetened to taste is to be drunk in large quantities, and as soon as there is the full purgative action the itchiness, rash etc., disappear.

Any saline purgative also serves the same purpose. The itchy parts are to be covered with lint soaked in Goulard's lotion. I have seen, this plan to succeed in many of my patients.

I am highly obliged to Kaviraj Ganonath Sen who has materially helped me in writing this article.

Conclusion—This is a very reliable drug in the treatment of nervous disorders mentioned in the text. The precautions of using milk and ghee must not be forgotten. If this drug be used extensively by scientific practitioners, I am sure they will recommend its introduction into the B. P. Many poor people hold a *mela* once a year. During this ceremony they take its decoction with milk, ghee and honey or sugar. This keeps them free from any disease. During winter consumers of this drug can safely sleep in the open fields without warm clothes. I have been using this drug for more than six years without seeing any bad effect other than erythematous rash. In the Campbell Hospital I have made many bed-ridden cases of disseminated sclerosis walk about in the hospital compound. As an alternative it is very useful in secondary and tertiary stages of syphilis.

I have used it successfully in two cases of epidemic dropsy of the legs recently.

[In view of the present interest taken in the use of indigenous drugs we publish the above article. If further investigation proves this drug to have even a tithe of the good qualities claimed for it by the above writer, it will prove a valuable addition to our resources.—ED., I. M. G.]

NOTES ON THE PREVALENCE OF FILARIA-SIS IN THE CALCUTTA POLICE FORCE

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As the knowledge of the geographical distribution and prevalence of the filaria Bancrofti in India is still defective, the following notes may be of interest. Moreover the prevalence of filariasis is of medico-legal importance. In a recent case (*Emperor v. Harnam Singh*), tried at the 5th Criminal Sessions of the High Court, Calcutta, in 1901-1902, one of the points by which the prosecution relied on fastening the crime of murder on the defendant, was the fact that Assistant-Surgeon Rai Bahadur Chuni Lal Bose (one of the Chemical Examiners to Government) had found a filaria in some blood stains on the clothing of the defendant, and also a similar filaria in the blood stains on the clothing of the murdered man. Now it depends on the prevalence and distribution of human filariasis as to whether such evidence is of any value or not.

During the months of October and November last year, I examined the blood of 100 constables newly admitted into the Police Hospital for all kinds of disease. The blood was taken at 1 P.M., and in most cases only one cover-glass was

Prevalence—I found filaria in 7% of the cases. The number of constables affected with filariasis was, however, probably much greater, for one case was examined on nineteen nights (besides being examined several times by day) and a filaria only found on one night and in another case filariae were only found on two out of seven nights, and seeing that, only one specimen of the blood was examined in most cases.

Species and Periodicity—The filariae had all the characters of the filaria nocturna, the hæmatozoal embryo of the filaria Bancrofti, as described by Manson. The covering and uncovering of the head and the shooting out of a spike or fang, as Manson calls it, from the head being easily seen and interesting to watch in dying specimens.

The members of the Expedition to Nigeria consider the F. nocturna and F. diurna to be one and the same species, the prevalence of the latter by day being due to the nocturnal habits of certain West African tribes. As bearing on this point, I may say that the Calcutta police constable has a good deal of night duty, and both he and his ancestors always took a mid-day siesta when they could get it. In fact most natives of India are, to a certain extent, nocturnal in their habits.

In these seven cases I examined the blood by day, but did not find any filaria, *eg.*, one case was examined on—

October	28th	at	8 A.M.	Result	nil
"	27th	"	noon	"	nil
"	31st	"	3 P.M.	"	nil
"	23rd	"	4 P.M.	"	one filaria
"	22nd	"	10 P.M.	"	two filariae
"	31st	"	10 P.M.	"	nine filariae

Dr. Manson in his article on filarial disease in *Davidson's Hygiene and Diseases of Warm Climates*, states that, "although when seen alive in the blood, the embryo, F. diurna resembles so closely F. nocturna as to be practically indistinguishable therefrom, a singular difference is observable between the species when seen *post mortem* on dried and stained slides of thickest blood films." This is that the F. nocturna is arranged in graceful curves, while the F. diurna looks shrunken and thickened and has assumed a stiff, rigid, ungraceful attitude. Dr. Manson says, "I consider it a diagnostic mark of value."

In the Police Hospital I observed dead forms of these filariae—certainly F. nocturna—in very stiff ungraceful attitudes and exactly like those figured by Dr. Manson as belonging to dead F. diurna.

Diseases of the cases in which filariae were found—Filariae were found in two cases of dyspepsia, one of incised wound, in one each of bronchitis, dysentery, bubo and syphilis (tertiary).

Amongst those examined were two cases of lymphæ scrotum with elephantoid fever, but filariae were not found.

Hydrocele and Filariasis—The blood in five cases of hydrocele was also examined for filaria with negative results. Hydrocele is a common disease of native constables. That it is prevalent in the districts also from which they come is shown by the fact that out of 631 recruits examined by me in the last six months of 1901, 36.6% were rejected. Hydrocele was responsible for 27.27% of the rejections, or more than any other two causes put together. The 631 recruits were affected with hydrocele to the extent of 99.8%*.

Geographical Distribution—There are no grounds for supposing that the filariasis with which these men were affected was contracted in Calcutta, in fact one affected man had only recently been recruited. The districts from which those affected came were the following—

Oude	{ District of Sultanpur, 3 cases	
	" Gonda 1 case	
N-W Provinces	" Ghazipur 1 "	
Northern Bengal	{ " Arrah 1 "	
	" Gya 1 "	
Total		7

The area of the recruiting ground of the Calcutta Police is fairly shown by the above-named districts. It is desirable that some observations should be made as to the prevalence of filariasis in the inhabitants of Lower Bengal.

OBSERVATION OF THE CLOTTING POWER OF THE BLOOD IN PLAGUE PATIENTS

By ALICE M. COTHORN, M B, B.S.,

Poona

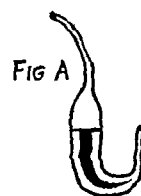
WHILE carrying on certain investigations as to the bactericidal and sedimenting power of the blood of plague patients, I was struck by a point which, I believe, has not been noted up to the present time. This was the failure to coagulate in blood obtained during life from virulent cases of plague.

I publish my observations now for what they are worth to other investigators, as I am on the point of leaving the country, and will probably not have an opportunity of carrying on my observations on the subject.

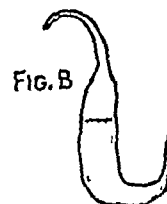
I took blood, which was collected in the capsules recommended by Professor Wright of Netley, in all, from 32 cases of plague during different stages of the disease. Of these twelve patients died within 48 hours of the examination, and of these twelve the blood of ten showed no coagulating power at all. Of the ten four died within twelve hours, two within eighteen hours, two within 24 hours, and two within 36 hours. The remaining two fatal cases

showed diminished coagulability and died within 48 hours. Of the 32 patients examined, nineteen, including eleven of the fatal cases, were examined on the 1st to the 5th day of the disease; five, including one fatal case, from the 5th to the 10th day, the remainder during the convalescent stage.

The blood was in every case drawn from the finger and collected in the capsules which were then immediately sealed up in the flame. Within an hour in the majority of the twenty-two specimens which coagulated, the normal appearance was obtained of a dark clot surrounded by a perfectly clear serum as in figure A. In a



few cases, including some of those who convalesced, the serum did not separate well, but remained reddish and scanty. The remaining ten specimens, although kept for varying periods up to three weeks, never showed the slightest trace of coagulation, but remained a thickish lake coloured fluid, which slowly trickled down the sides of the capsule when this was inverted, figure B.



It would be interesting to observe (1) how far blood taken from patients in other acute fevers shows a similar absence of coagulability, and (2) the bearing of this sign when present on the prognosis and pathology of the disease. It is with the hope that some one may be led to pursue the subject that I publish my own incomplete observations.

AN UNUSUAL FORM OF BUBONIC PLAGUE

By J CHAYTOR WHITE, M D (EDIN.), D P H (CAMB),
MAJOR, I M S,

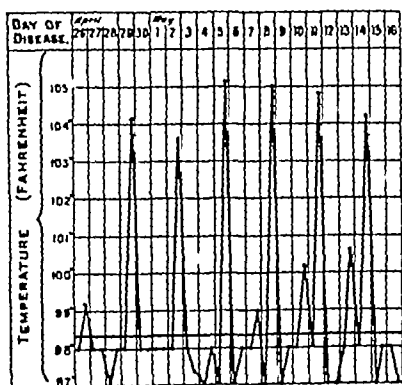
Offg Sanitary Commissioner, N W P and O

A VERY unusual case of bubonic plague came to my notice in England last March, which, I think, is worth recording as shewing the extreme difficulty of diagnosing this disease. A sailor on board one of the unaccelerated Union-Castle liners, took ill fifteen days after leaving Cape Town with fever and swelling in

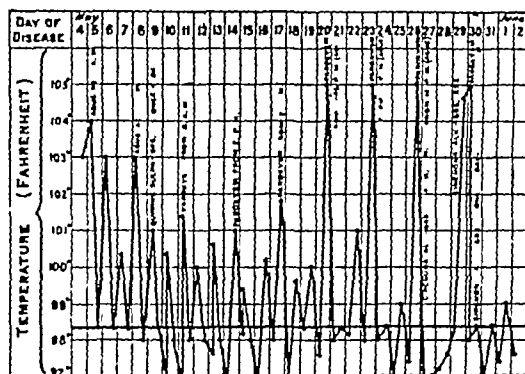
* [An examination of over 1,000 Bihar prisoners in Bhagalpore Jail showed an 8 per cent prevalence of hydrocele. L.D., I M G.]

QUARTAN FEVER IN CALCUTTA AND DACCA

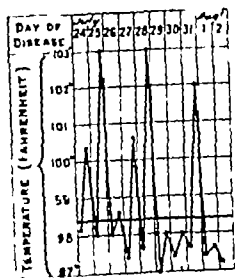
By U N BRAHMACHARI, M A, M B



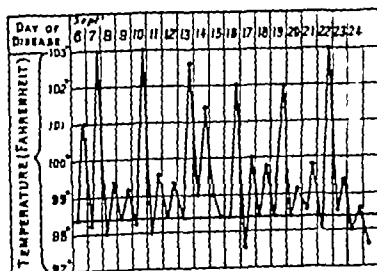
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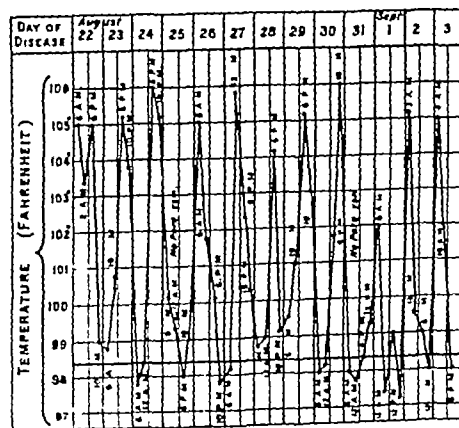
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the left inguinal region. He told the doctor of the ship, he had been wrestling and strained himself, and had felt pain and tenderness from that time. He had a continuous temperature, the bubo suppurated, and owing to the bent position he occupied in his bunk, the pus-burrowed along the flank. Plague was not suspected, and on the arrival of the ship at Plymouth pratique was given by the port medical officer. At Southampton, the ultimate destination of the steamer, the man was landed and sent up to the General Hospital, where the Resident Surgeon, on hearing his history, refused to admit him and sent for the M O H, who sent the man to the floating plague hospital for safety. Though suppuration was profuse, cultivations were made and sent to the bacteriologist of the L G B (Dr Klein), who somewhat to surprise found the *b. pestis*. I also took cultures, and the bacillus grew profusely and was largely used at Netley. Here was a case that abused all the ethics of the disease, the man was fifteen days out when he became ill. The bubo suppurated for about ten days, and when the man was almost convalescent from plague, the *b. pestis* was found in the profuse discharge.

QUARTAN FEVER IN CALCUTTA AND DACCA

(Continued from page 291, August 1901)

By U N BRAHMACHARI, M A, M B,

Officiating Teacher of Materia Medica and Pathology, Dacca School of Medicine (formerly House Physician, Medical College Hospital, Calcutta)

THE present paper is a continuation of the series of five cases of quartan fever which were published in the August 1900 number of the *Indian Medical Gazette*.

Case No 6—Alam, Chinaman, *æt* 28, was admitted into the wards of the First Physician, Medical College Hospital, Calcutta, on 23rd April 1901. Patient came from Jalpaiguri where he was attacked with malarial fever for the first time and was treated with quinine. The temperature chart exhibited a simple quartan fever tending to become double.

Case No 7—Baldao, Hindu, *æt* 50, was admitted into the wards of the First Physician, Medical College Hospital, Calcutta, on 4th May, 1901. Patient was a pilgrim going to the temple of Jagannath. He was for some time in Bardwan where he was attacked with intermittent fever. The temperature chart exhibited a triple quartan fever being converted into the simple quartan type due to small doses of quinine. There was also a well marked retardation of the paroxysms due to quinine.

Case No 8—Idatulla, Mahomedan, *æt* 30, was admitted into my wards in the Mitford Hospital, Dacca, on 24th July 1901. Patient came from Mymensing where he had the first attack of malarial fever about three years ago and suffered from time to time since. The temperature chart exhibited a double quartan fever being spontaneously converted into the simple type due to spontaneous destruction or weakening of a mild set of quartan parasites.

Case No 9—Badri, Hindu, *æt* 25, was admitted into my wards in the Mitford Hospital, Dacca, on 5th

September 1901, in a state of extreme anæmia. The temperature chart shewed a triple quartan fever due to the presence of one set of strong and two sets of mild quartan parasites. The extreme anæmia led to the suspicion of ankylostomiasis, but the examination of the stools gave negative results.

Case No 10—Bachu, Mahomedan, *æt* 20, was admitted into my wards in the Mitford Hospital, Dacca, on 21st August 1901. Patient came with history of having suffered from intermittent fever for about a month. The temperature chart was that of an irregular type of intermittent fever with no paroxysms for two days and quotidian attacks for several days. There were marked retardations and anticipations of the paroxysms like what we have in æstivo-autumnal fevers. The blood contained a very large number of quartan parasites in various stages of development. The temperature chart is a 6 hour one.

Besides the above, there was another case of simple quartan fever in the wards of the First Physician, Medical College Hospital, Calcutta. The patient was nephew to patient No 5 with whom he lived since his boyhood. He came with a history of intermittent fever for about three years.

Remarks—All the cases recorded above were chronic ones with well marked enlargement of the spleen. Some of the cases, namely, Lord, Dhookmoonma and Badri, came with extreme anæmia.

In studying cases of quartan fever, it is common to find a tendency towards conversion of one type of the fever into another (*v* charts vi and viii). This peculiarity is I think, characteristic of quartan fever. The quartan parasite is characterized by being the mildest and at the same time the most obstinate of all the malarial parasites. Due to its mild nature a set of quartan parasites may be so much weakened spontaneously as to be able to give rise to no clinical symptoms for some time. In this way a double quartan fever may be converted into the simple variety. Then, again, due to its obstinacy, the same set of parasites in the process of "their ordinary cycle of development may eventually reach a number sufficient to produce again the characteristic clinical symptoms." Thus a double quartan fever may be spontaneously converted into the simple variety, and then after a time be reconverted into the original type without any re-infection. This change of type is, I think, more common than has hitherto been observed.

The following is a list of all the cases that have come under my observation—

- | | |
|-----------------------------|---|
| 1 D Costa | Simple quartan fever of a peculiar type |
| 2 D'Costa (nephew to above) | Simple quartan |
| 3 Akawon | Ditto |
| 4 Lord | Double quartan |
| 5 Abdul Huq | Ditto (becoming simple due to quinine) |
| 6 Dhookmoonma | Simple (becoming remittent and terminating fatally) |
| 7 Alam | Simple (becoming double) |
| 8 Idatulla | Double (becoming simple) |
| 9 Baldao | Triple (becoming simple due to quinine) |
| 10 Badri | Triple |
| 11 Bachu | Irregular (quotidian for some days) |

SOME CASES OF CEREBRO SPINAL MENINGITIS (EPIDEMIC?)

By J. RUTTER WILLIAMSON, M B,

Miraj, W India.

Not very long ago when working among famine orphans, I had a run of cases of cerebro spinal meningitis. As some features were prominent which are usually absent or very slightly developed, it may be of interest to record some of the notes I made at the time

1 Diarrhoea is usually not common, the rule is constipation. In all the cases of my series it was present at the commencement of the illness

2 No rash, petechial or otherwise, was made out. In one very dark boy there seemed to be some purplish motting, but owing to his extremely dark skin naturally, it was hard to be certain of this

3 The backward pose of the head seemed assumed to relieve pain rather than as if caused by muscular spasm. The nuchal muscles were not notably hardened as in spasm. This has been also noted by Osler in a series of cases recorded by him

4 Vomiting is usually intractable. In my cases it seemed largely of gastric rather than cerebral origin, as it yielded easily to bismuth, Ac Hydrocyan Dil, etc

5 In one case the cornea became rapidly clouded. I would suggest this might be due to tropic change from involvement of ciliary ganglion

6 Pronounced optic neuritis was found in one boy eight hours after being brought in to me. This was of an extreme type and showed beautifully the soft "mushroom" like appearance in one eye, the other eye had it less fully developed. One other case showed a much slighter papillitis. Conjunctivæ were suffused. Kernig's sign was sought for in five cases and elicited in three

8 Athetoid movements of fingers were noticed in one case

9 Temperature soon became subnormal. It has been suggested that this might be due to the exhausted condition of these famine children before onset. It has been recorded I think by Councilman (U S A)

Total number of cases—eight under personal care and seven or eight others were under the care of a colleague a week or ten days previously

Quinke's lumbar puncture was performed once for confirming diagnosis microscopically. It had the result also of immediate relief in pain and complete cessation of convulsions. I drew off 2 oz of fluid

I also did cerebral puncture in one case immediately after death for diagnostic confirmation

All of my cases died within two or three days except one lad of ten years who, after three days' illness, got sufficiently better to crawl away when I was not present. He was not seen again

A Mirror of Hospital Practice.

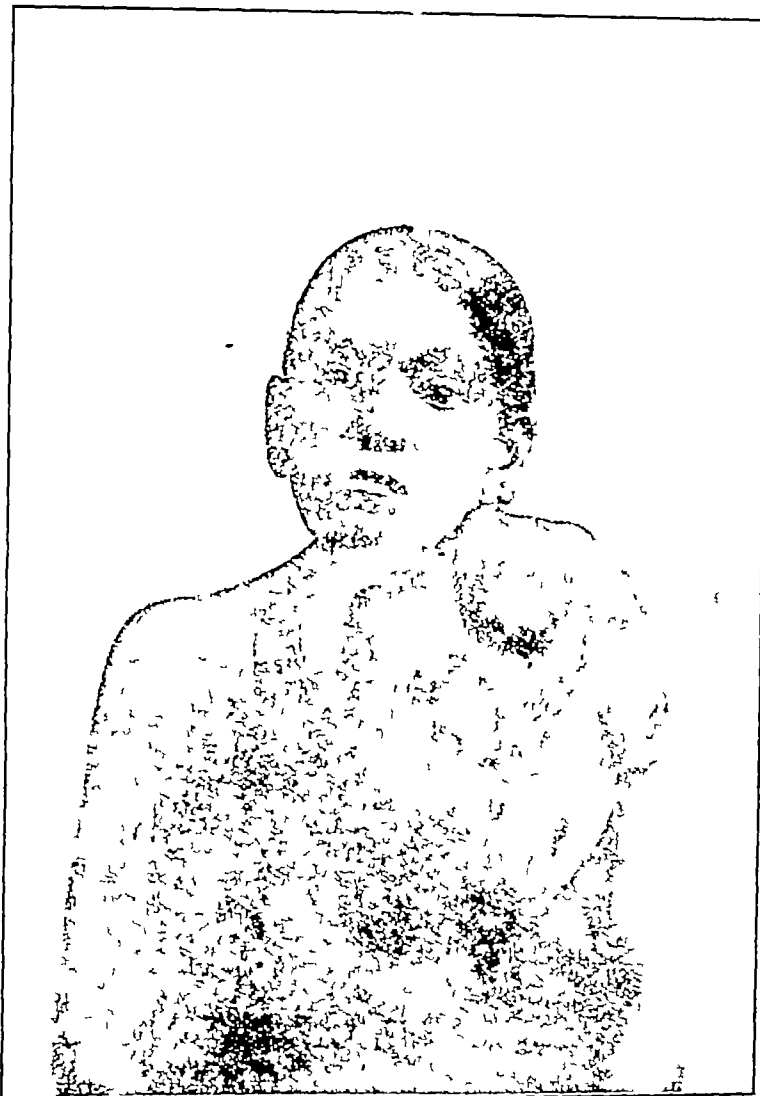
A CASE OF ENCHONDROMA OF SUB-MAXILLARY GLAND *

By R ROBERTSON, M B,

MAJOR, I.M.S.,

Medical College, Madras

THOYANMAH, age 35. Growth began as a small hard swelling in the left submaxillary region. The growth of this tumour was slow during the first two years but



ENCHONDROMA OF SUB-MAXILLARY GLAND

for the last three it has been rapid. There has been no dysphagia, dyspnoea, or interference with the movements of the tongue. No pain. The only inconvenience is the increasing weight of the tumour which the patient supports by a sling going round the back and across the right shoulder. The tumour is a hard lobulated mass growing from the submaxillary gland, the base extends from behind the lobule of the left ear to the symphysis and downwards extends almost to the umbilicus. Large

* A paper read at a meeting of Madras Branch B.M.A.

hard round nodules stand out prominently on the anterior and posterior aspects. A number of large veins are seen coursing over the surface. There was no difficulty in removing the growth, in fact it was shelled out by the fingers. On the posterior aspect there was smart venous bleeding for a few seconds from enlarged branches of the lingual vein. On section the tumour showed a simple character, no secondary changes were visible. The tumour was wholly encapsuled. The measurements from above downwards was 15 inches, round the tumour 27 inches, round the long diameter 31 inches. I may mention that owing to the weight of the tumour the head was kept partly fixed and inclined to the left. The wound healed by first intention save for a small portion under the chin, which was allowed to granulate owing to pruricity of skin flaps. The tumour I think is a record one and is now exhibited in the Madras Medical College.

INTERSCAPULO THORACIC AMPUTATION FOR CHONDRO - SARCOMA OF HUMERUS AND SCAPULA *

By W J NIBLOCK,

CAPTAIN, I M S,

Medical College, Madras

K P, Malayali ryot from the West Coast, 38 years of age, Hindu male, was admitted into the Surgical Wards of the General Hospital, Madras, on 10th May 1901, with a large tumour affecting right upper arm.

From his statement it was understood that the tumour commenced about eight or ten years ago as a small painless swelling at the upper end of the humerus, and had continued to increase until it reached its present size. He was unable to say whether the increase in its growth had been more rapid recently or not.

On admission patient was seen to be a small man, rather thin, but not cachectic. He stated that the tumour was painless, or almost so, and that his chief trouble was the annoyance caused by the large size, and weight, of the growth, which he supported by means of a large shawl slung from the opposite shoulder.

On examination the tumour was found to be roughly oval in shape, hard to the feel, with the skin over it healthy. Several large veins could be seen coursing over it in all directions.

The growth apparently involved the whole of the right humerus and was diagnosed as a probable chondro sarcoma. It measured in its greatest circumference from above down, 3 feet 7 inches, and in its greatest circumference horizontally, 3 feet 2½ inches.

The right forearm was of the same size as the left. No œdema was present. No difference could be detected between the pulse of the right, and that of the left, side.

Operation—As the scapula and clavicle did not appear to be involved in the growth, which seemed to merely overlap the joint, it was at first intended to do a disarticulation of the shoulder, and the operation was commenced with that end in view.

An attempt was first made to tie the subclavian artery, but this vessel was so much displaced and so flattened out as to render its ligature impossible without resection of the clavicle, which was not considered



CHONDRO-SARCOMA OF HUMERUS AND SCAPULA

advisable. It was however found to be possible to completely control the circulation in the limb by pressure with the finger on the artery, and the attempt to tie the vessel was abandoned, the wound being left open to enable direct pressure to be applied to the artery, should it be found necessary to do so at a later stage of the operation. An anterior skin flap was now marked out, several large veins requiring to be divided between ligatures. The axilla was opened, and the axillary artery and vein ligatured and divided high up with little difficulty. After the anterior flap had been cleared as much as possible, the posterior was partly made. It was then seen that the joint was hopelessly involved. The clavicle was therefore cut across just

* A paper read at a meeting of Madras Branch, B M A

external to the junction of the outer and middle thirds, and as the scapula was found to be infiltrated with the growth it also was removed. A chain of enlarged axillary glands was excised. The skin flaps were brought together, two drainage tubes inserted, and the part firmly bandaged, over a large absorbent cotton wool dressing.

Comparatively little blood was lost. During the operation the patient had two injections (7 minims each) of *Liquor Strychnine* and two hot saline enemata (one pint each).

The weight of the patient on the evening before operation was 137 pounds. The tumour after removal, weighed 18 pounds, i.e., more than one third of his total weight.

Subsequent history of case—The patient was removed to the ward in a state of collapse, hot water bottles, &c., were applied.

At 10 A.M., (about 1½ hours after operation) a saline enema (one pint) was administered.

„ 11 „ Saline injection subcutaneously, 12 ozs.

„ 3 P.M., *Liquor Strychnine* minims 6, hypodermically.

„ 5 „ *Æther*, minims 20, hypodermically.

„ 8 „ „ „ „ „

„ 10 „ „ „ „ „

16th, 12.30 A.M., *Liquor Strychnine* minims 7, hypodermically.

„ 4 P.M., *Tr. Digitalis*, minims 10, hypodermically.

After this he was put on a mixture containing *Liquor Strychnine* and *Tr. Digitalis*, 5 minims of each, thrice daily, until 29th, when it was discontinued.

The subsequent progress of the case was uneventful. The wound healed without any difficulty, except at the lower part, where the drainage tubes had been inserted, and the stitches were removed on the 13th day. The patient weighed a month after operation (just before discharge from hospital) 95½ lb.

The bulk of the tumour on microscopic examination was found to consist of cartilage, the sarcomatous element consisting chiefly of the large spindle-celled variety. It was undergoing myxomatous degeneration in many places.

Remarks—The points which strike me as of interest in this case are—

1 The fact that, although the tumour was of such an enormous size (more than one third the total weight of the patient), there was practically no pain, and no disturbance of circulation or nutrition of the forearm.

2 The most careful examination prior to operation failed to detect any disease of the scapula, or implication of the shoulder joint, although during the operation both of these were found to be infiltrated with the growth.

3 The slight hæmorrhage was also a remarkable feature in the case, considering that the subclavian artery had not been tied before the operation, and that so many large veins had to be cut through. The latter were, however, chiefly superficial and were, most of them, clamped before division. The total amount of blood lost did not appear to be more than ten ounces in all. The subsequent shock must therefore have been due chiefly to the nervous disturbance.

4 The resulting deformity, although necessarily very great, was, owing to so much clavicle having been left behind, much less than in a subsequent interscapulo-thoracic amputation performed during the year in the same hospital, in which the entire clavicle was removed. It appears to me therefore advisable to remove as little as possible of the clavicle in operations of this sort, unless the bone itself be actually involved, when of course complete removal is necessary.

A CASE OF "SYPHILITIC FEVER"

By E. HASELL WRIGHT,

CAPTAIN, I.M.S.,

3rd Infantry, H.C.

The following case I consider sufficiently interesting from a diagnostic point of view to be worth while recording—

A sepoy of the 3rd Infantry, H.C., reported himself sick on the evening of November 8th, 1901. He chiefly complained of fever, that had started that afternoon about 3 P.M. and was ushered in with a rigor. But at the same time he complained of some pain and swelling about the right groin and thigh.

Previous history—His medical history sheet only showed eight entries in six years as follows—Wound, 14 days, itch, 4 days, itch, 17 days, ague, 7 days, ulcer, 14 days, ague, 6 days, ague, 10 days, ague 3 days (September 1900).

On examination—His temperature was found to be 103°F. Tongue coated but moist. There was no enlargement of either liver or spleen. Bowels regular. Lungs free from abnormal sounds on auscultation. Urine, acid. Sp. Gr. 1025, no albumen or sugar. Deposit lithites. There was a swelling of a diffuse nature situated in the groin and inner side of the thigh near the right side pubes, this was hard and somewhat elastic, painful and slightly tender to the touch. There were no signs of scurvy. He was detained under treatment for ague. On the 9th morning the patient's temperature had fallen to normal, but rose again in the evening and went through a typical ague attack. The swelling remained in the same state and was considered to be a myalgia of probably malarial origin. Evaporating and anodyne lotions were applied. From the 10th November to 17th the temperature varied from 100°F to 103°F at night, falling to normal in the morning, the rise was always accompanied by rigor and followed by sweating, reaching normal in the morning and appeared to be totally uncontrolled even by large doses of quinine. The swelling at no time showed a tendency to soften or break down. From November 25th to December 4th he was treated by hypodermic injection of quinine bisulphate gr. iv once daily with no apparent benefit. The paroxysm coming on just as regularly, and the temperature varied from 99.8°F to 102°F, at night time, the mornings showing a normal temperature. On the 7th December, the patient complained of some pain in the tibia for the first time, especially severe at night, and on examination some thickening of both tibiae was noted, there were a few scars on the legs, though not at all characteristic of specific mischief. There was pain complained of in the joints. A vague history of some venereal mischief was obtained some nine years previously, though it was impossible to get any idea of its nature. On this day he was placed on potassium iodide gr. 15 thrice a day and locally iodine tincture, that night the temperature rose only to 99.6°F and remained normal both night and morning up to the 11th December. On the 9th December the patient complained of symptoms of iodism, so the dose was reduced to gr. 5 t.d. which resulted in his making an uninterrupted recovery. The swelling gradually subsided after giving the iodide, and had completely disappeared on the 14th December 1901.

Concluding remarks—This case is interesting in that it occurred in a native who had previously suffered from malarial fever, though his last attack of malarial fever dated one year previously. The blood was examined for the plasmodium, but no definite conclusion could be obtained from this examination owing to a

faulty microscope, the lenses of which were old and past all accurate observations. This case much resembles that recorded by Dr Sidney Philips in *B M J*, 1899, though in the latter case the disease occurred in a woman and lasted for a much longer period. In this case the fever occurred nine years after primary infection, she had intermittent fever preceded by chills and followed by sweating every other day for eight months earlier in the illness, the paroxysms occurred daily, but later the fever was identical with tertian malaria. Quinine in this case (which was mistaken for malaria) had no effect. But soon after giving potassium iodide the temperature began to fall, and the temperature reached the normal in a few days.

Syphilitic fever may occur at any time during the secondary and tertiary stages and almost invariably occurs just prior to the outbreak of the secondary rash. It may be continuous, intermittent and remittent. But the most interesting from a diagnostic point of view is that occurring in syphilitic subjects many years after the primary infection, and this possibility should be borne in mind when we get a case of anomalous fever uncontrolled by quinine and other anti-malarial drugs in a case in which the fever resembles a malarial infection. The necessity of a good microscope is evident nowadays for an accurate and scientific diagnosis. Syphilitic fever may be mistaken for the following —

(1) Tuberculosis, (2) typhoid, (3) malaria, (4) septic inflammation, and (5) rheumatic fever. The following case is interesting as a contrast to my case with reference to No. 4 which was admitted into the hospital about the same time as the case recorded.

On December 1st, 1901, a sepoy of 3rd Infantry, H C, was admitted into hospital suffering from fever, his temperature being 102.4°F. He also complained of some pain in the right popliteal space. On examination he was found to have a hard and very tender tumour free from pulsation in this situation, about the size of an orange. There was no history of specific mischief, or scurvy or tubercle, no enlargement of liver and spleen. Urine febrile. From the 1st to 7th the fever was regular and intermittent, rising at night and falling to normal in the morning. The tumour remained in much the same state, and was painful, hard, tender and hot. On the 8th and 9th the temperature was continuous and the swelling showed a tendency to soften and poultices were applied. On the 11th fluctuation was detected and an incision into the tumour let out about 3 ozs of pus. The temperature gradually fell to normal on the 12th, but rose again for the following two days owing to improper drainage. This being relieved the temperature fell to normal, and the patient made an uneventful recovery. The pus that was evacuated was examined for filaria with a negative result. The abscess was probably caused by some septic lesion on the foot or leg, though at the time of his admission no very definite lesion was discovered. The action of the iodide in the first case was very remarkable and terminated in a speedy recovery.

Both these cases were at first mistaken for malarial fever, which was very prevalent at the time of their admission.

SYPHILITIC PLEURISY

BY C C BARRY,

CAPTAIN, I M S,

Mandalay

The following case has lately been under treatment in the Mandalay General Hospital —

A Hindu male aged 30 years was admitted into hospital suffering from necrosis of the sternum, the result of tertiary syphilis. He admitted having contracted syphilis some years back, but could not give any approximate date, there was, however, no doubt that it was some years ago. Under chloroform a sequestrum was removed from the sternum and the wound healed satisfactorily by granulation. The patient at the same time was put on a course of mercury and iodide of potash.

Fourteen days after the operation, when the wound had healed the patient complained of a dull aching pain in the right side and of shortness of breath. On examination of the chest the right pleural cavity was found to be full of fluid. The patient's chest was aspirated and 140 ounces of clear straw coloured fluid drawn off.

He was much relieved, and the pain left, but the fluid quickly returned unaccompanied this time by pain, and 8 days later it was again found necessary to aspirate the right side of the chest on account of dyspnoea, 60 oz of clear fluid were drawn off.

After this the patient was quite comfortable, but in 11 days dyspnoea again recurred and he was a third time aspirated, 70 oz of clear fluid being drawn off.

The patient now felt quite well and insisted on leaving the hospital 4 days after the last operation. At the time of his leaving there was no evidence of fluid in either of the pleural cavities.

The effusion of fluid was limited to the right side of the chest, and was unaccompanied by pain of any severity, such pain as occurred was only of a dull aching character.

What distressed the patient was the dyspnoea arising from compression of the lung by the effused fluid. Both lungs when examined after the pleural effusion had been drawn off appeared normal, and no signs of phthisis could be discovered. The temperature through the whole period showed a slight irregular rise to 10° or slightly more at nights. It is to be regretted the patient insisted on leaving hospital, but he stated he felt well and wished to go to his friends in India.

Cases of this nature are, I believe, of uncommon occurrence, and, though I have treated a very large number of cases of syphilis, I cannot remember having come across a similar case to this before. Mr Jonathan Hutchinson, in his book on *Syphilis*, mentions two cases in which pleurisy was thought to have been of syphilitic origin, but neither case apparently was accompanied by pleural effusion. Prof N de Domeneis, as quoted in the April number of the *Medical Review*, has collected seven cases of syphilitic pleurisy in five years, and the description he gives of the cases closely resembles the history related above. He states moreover that after two or three tapplings no further exudation took place, but there was progressive and well-marked thickening which continued for 3 to 7 years and caused considerable distress. None of his cases however admitted having had syphilis, though in each case there was characteristic polyadenitis.

The points of interest in the case mentioned appear to be the painless character of the pleural effusion and the rapidity with which it recollect. Considering the supposed rarity of this complication, it would be of interest to know whether other medical men in India have come across similar cases, more especially those in the larger towns where syphilis is so exceedingly prevalent

EXTENSIVE OPERATION FOR ANEURISM *

By ASHTON STREET, R.C.S.,

MAJOR, I.M.S.,

Grant Medical College, Bombay

MANGAL SINGH, 30, Hindoo, Sowar, 2nd Bombay Lancers. Admitted to Regimental Hospital, 25th May 1901—to West Hospital 4th June 1901—for a swelling in the left iliac region

The patient noticed five months before admission a swelling the size of a pen—three months since the size of a betel nut. During the march to Rajkote from Deesa it increased in size very much, and he had some pain. Since then it has gradually been increasing. There is now a soft fluctuating, pulsating tumour the size and shape of a mango in the left iliac region. The tumour is fixed below and the skin over is partially adherent, red and hot to the touch.

He has not very much pain, but is inconvenienced by the swelling, as it prevents free movement of the hip joint. The pulsation can be both markedly felt and seen and is expansile as well, though not to such an extent as the pulsation. The Medical Officer who admitted the patient thought it was a tumour situated over the iliac artery. The patient was urgent in his demands for an incision, as he said the abscess was now ripe. The thigh is slightly flexed and cannot be quite straightened without much pain. The skin is reddened slightly, oedematous and adherent. The tumour projects over Poupart's and fills up the iliac fossa to the *a.s.s.* and 3 inches above Poupart's. Its long axis is not in the line of the artery, but at about an angle of 30° to it. Bowels act regularly, no trouble with evacuation, no evidence of spinal caries. Temperature normal. Hepatic and splenic dullness normal. Very slight murmur heard on auscultation. Pulsation stopped on pressure to the aorta. Heart sounds normal. Pulse of normal tension and strength.

The diagnosis was undoubtedly between rapidly growing sarcoma and aneurism, and points much in favour of the latter. He was given a low diet and mist Pot Iod for some days without any appreciable change. He then began to get very impatient about this treatment for "his abscess" and asked for incision to be made. To clear up any question of sarcoma, and to satisfy the patient, a very fine trocar and cannula was introduced when pure blood jetted out. No cells could be found under the microscope. After this the patient consented to being transferred to the Civil Hospital for ligature of the artery. The part was rendered aseptic and his bowels well opened by castor-oil. He was chloroformed, and an incision made from 1 inch above the *a.s.s.* to the middle of Poupart's about three quarter of an inch about it. The skin here was not so adherent as in the more prominent part of the swelling about one inch higher up, still there was a little adherence. The subcutaneous connective tissue and intermuscular spaces were distended with a yellowish grey gelatinous effusion so often seen around sarcomatous growths that I thought I had made a mistake in diagnosis. I tried to dissect the skin downwards from the incision thinking it would

be easier to get beneath the tumour, but was unable to. I then tried above. I may mention I had no tourniquet on, but Mr Bopardikar, the Assistant Surgeon, was hovering over the aorta with outstretched thumbs. Whilst proceeding with this dissection upwards suddenly a burst and a deluge of blood from the lower part put an end to any doubt as to the diagnosis. Mr Bopardikar and the Hospital Assistant manfully strove for the aorta. I got two fingers into the ruptured sac, dilated the opening, and after perhaps ten agonising seconds got a finger tip into the mouth of the vessel, and controlled the hæmorrhage. The clot was mopped out very soft and apparently recent, when bleeding from the distal end was noticed. An assistant's finger stopped this very easily, applied through the wound. Whether it came from the vessel above or below the deep epigastrie could not be made out. The condition of affairs then was digital pressure being applied to the aorta about one inch above the umbilicus and pressure about Poupart's ligament, which did not leave much room for operating. However, I opened the abdomen in the linea semilunaris over the line of the common iliac, and getting the intestine on one side with not much difficulty, was able to scratch through the peritoneum over the vessel and apply a catgut ligature. Neither the ureter nor the vein were seen, nor could I make out whether the vessel tied was the common or the external iliac. It was about an inch away from the sac and seemed, as far as I could make out, a healthy artery. Owing to the small space at my disposal, in making certain of the structure tied being the artery only, I got much help by passing a probe through the sac into the artery and feeling it before tightening the ligature. A simple surgical knot was tied, and then pressure taken off, all hæmorrhage from the proximal end was stopped, but I was delighted to see a little pulsating stream from the distal. A ligature was easily passed around this and then there was time to examine the sac. The patient's condition and pulse all through were wonderfully good. How much blood he lost in those ten seconds I cannot say, but I should think 15 to 20 ounces. The sac inside was very irregular, with little pockets, which accounted for my not getting my finger on the mouth of the artery sooner than I did. There was practically no laminated clot, and the sac was very thin and adherent. As much of the sac and the old arterial wall as could be was dissected off, which was almost the entirety. The peritoneum over the artery was left as it was the opening not being more than one inch in length, and there was no communication between that and the wound in the region of the sac. The opening in the abdominal wall in the line of the iliac artery, was closed by catgut sutures. The incision parallel to Poupart's was closed with silver wire sutures and a drainage tube inserted running up towards the bifurcation of the common iliac. Gauze dressing and cotton wool and a bandage applied, which were changed on the fourth day. His leg was wrapped in cotton wool, and warm water bottles applied. An hour after recovering consciousness he was given Tinct. Opium 20 which was repeated at bed time. Slight pain in the abdomen and troublesome cough complained of next day, but flatus and urine passed easily and freely. He did not look particularly anæmic. The wounds when dressed on the fourth day were practically healed, the drainage tube was removed, temperature 101°6, and he complained of his bowels not having been moved. Ol Ricini, 2 drachms, followed by an enema relieved this and brought the temperature to normal. Wound dressed again on the seventh day and a little pus found coming from the opening. Sutures removed. A sinus remained which had to be stuffed with gauze to get it to heal, which took some time as it would take a probe for 2½ to 3 inches. This, however, healed by degrees, and he was sent back to his regimental hospital on the 18th July 1901, and from there on the 8th August with the wound dry and healed. He was given three months' sick leave. He had for six weeks after the operation a very troublesome cough which was paroxysmal and spasmodic. The leg always

* Being a paper read at Bombay Medical and Physical Society

kept warm and of good colour. He never complained of any pain, but though I frequently examined for it I could never find pulsation in the femoral. When discharged he was able to walk and run, and very likely could have drilled, but with two incisions through his abdominal wall I thought a little extra time should be given him for consolidation, so sent him to his native place for three months. I tried to get him down here to show, but I regret to say I had a telegram from his Commanding Officer saying he hadn't returned to duty yet. I intend to write again and ask for enquiries to be made as to his absence. The peculiar features of the case strike me as being (1) the very small amount of pain he suffered from, considering the size of and the quickness of growth of the aneurism, (2) the comparative ease with which the hæmorrhage was arrested, and (3) the very great ease with which in spite of pressure being made on the aorta the common or external iliac was reached and ligatured by an anterior incision. I should never think of attempting the extra peritoneal method again in an ordinary case.

A CASE OF ANEURISM OF THE ASCENDING AORTA

BY SATIS CHUNDER BANNERJEE,

ASST SURGEON,

House Physician, Medical College Hospital, Calcutta

SUKKAN Hindu male, aged 35, was admitted into the Medical College Hospital on the 20th of August 1901, under the care of Lieutenant Colonel Harris, who has kindly permitted me to publish the case.

The patient, a cooly by occupation, gave a history of syphilis accompanied by joint troubles about 10 years previously. Alcohol occasionally to excess had been indulged in. About a month prior to admission, while lifting a heavy weight, he experienced a sudden agonising pain at the region of the heart. This pain persisted, varying in intensity at different times, but always increased on exertion. About a fortnight ago he noticed a bulging on the left side of his chest, and at the same time he began to suffer from difficulty in swallowing and breathing. For five days, before admission, he had been much troubled by a painful cough accompanied by a large frothy expectoration.

He complained of constant pain in the cardiac region which was aggravated on lying down, of a paroxysmal cough accompanied by much expectoration, of dyspnoea worse on exertion, of dysphagia during the swallowing of solid food.

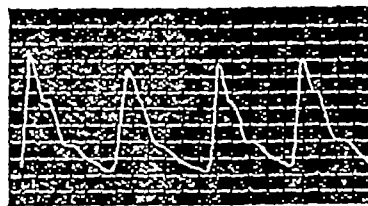
The patient was fairly nourished. Face slightly cyanosed. Expression anxious. Breathing hurried. Right pupil somewhat smaller than the left.

There was a rounded pulsating swelling about the size of a walnut occupying the second left intercostal space, $\frac{1}{2}$ " to the left of the sternal margin. The pulsation of the swelling was heaving and expansile, and palpation revealed a systolic thrill and a diastolic shock of moderate intensity. The apex beat of the heart was felt in the left sixth space $1\frac{1}{2}$ " outside the nipple line. On auscultation over the swelling and also at the aortic area a double bruit was heard, a double bruit was also audible over the femoral arteries (Duroziez' bruit).

The mitral first sound was booming. A soft systolic murmur was heard over the trachea (Drummond's bruit). Tracheal tugging was present.

The radial pulse was jerky but there was no difference in rate of rhythm between the two sides.

Pulse tracing was taken at both radials and femorals under a pressure of 2½ ozs and showed no difference. One pulse tracing is appended.



Beyond obstinate constipation and a certain amount of bronchitis there was nothing else worthy of note in his condition.

Liq. Trinitrin—m i was prescribed every 6 hours and Mag. Sulph given to relieve constipation.

Progress of the case—On the second day after admission the pain in the cardiac region increased and shooting pain was experienced in both arms. He continued in much the same condition until the evening of the third day, when the dyspnoea began to increase, and he died at 2 A.M. the next morning.

The *post mortem* examination was held by Dr L. Rogers, Professor of Pathology, the result of which I have been favoured with his permission to publish.

The right auricle was slightly hypertrophied and was covered externally by a thick layer of effused blood. The wall of the right ventricle was considerably thickened, partly due to laminated blood clots on the pericardium and to fatty deposit.

Tricuspid orifice admitted tips of three fingers. The cusps of the valves were normal.

Left auricle was hypertrophied.

Left ventricle was greatly hypertrophied and was 1" in thickness, being covered by $\frac{1}{4}$ " of fatty layer, outside which again was a thick layer of dark laminated clot.

The aortic orifice was normal. The cusps *slightly thickened*. The valves were competent and held water *post mortem*, although forming part of the sac of aneurism.

Mitral orifice admitted three fingers. The cusps of the valves were normal.

Pulmonary valves were normal.

The pericardium was adherent to the heart over a considerable portion of its area by means of a thick dark laminated clot. Fluid blood was present between the unadherent portions of surfaces. Its cavity communicated above with the aneurismal sac which was about the size of a large orange, formed of the intra-pericardial portion of the aorta (which was markedly atheromatous), the pericardium being incorporated into the wall and adherent to the posterior surface of sternum along its left border from the second to the fourth costal cartilage. From the upper part of the sac the arch of aorta sprang about an inch below the origin of the innominate artery, the opening of which was about $1\frac{1}{2}$ " from the aortic valves. Arch of thoracic aorta and its branches were normal in calibre and showed only atheromatous changes.

Remarks—Three important points in this case are—

1 Situation of the tumour. There was no swelling on the right side of the sternum.

2 Well-marked double bruit at the aortic region, though the orifice was normal and the valves very slightly atheromatous. The diastolic bruit was due to their relative incompetency during life, the aneurism (part of the wall of which was formed by aortic valves) being distended in lifetime.

3 The communication between the aneurism and the pericardium was evidently of some standing as shown by the laminated and partly organised layers of blood clot lining it, so that the unobliterated part of the pericardium formed part of the false aneurismal sac

A CASE OF SNAKE BITE

By BIMAN BIHARI BASU,

ASSISTANT SURGEON,

Temple Medical School, Patna

KFWLA, Hindu male, aged 45, was admitted in the Bankipur Hospital for the treatment of snake bite on the 2nd of June 1901

Previous history—On the previous day he came to the out-patient department, at 7 A.M., with the history that he was bitten by a snake, on the neck, at about 4 A.M., while asleep. On examination only one puncture could be made out over the right side of his neck—the part being slightly swollen. The patient's gait and general condition were normal. The tissues round the puncture was excised and solid silver nitrate well rubbed in over the part after excision. As the patient developed no symptoms for nearly two and half hours after this, he refused to stay any longer. A few hours after he left hospital, he started vomiting and felt very ill. At night he was unable to swallow anything and was restless. In the morning he had to be carried back to the hospital for admission, being unable to walk.

Condition on admission—*Motor symptoms*—The patient was unable to stand. He could not raise his arms, but could move them to a limited extent with difficulty. There was marked ptosis on either side. The pupils were slightly dilated. There was difficulty in opening the mouth and in deglutition. He could not open the mouth more than a third of an inch apart. Speech was thick and slow. The sternomastoid muscles on either side were slightly rigid. The reflexes were exaggerated, and spasms could be produced all over the body by slightly pinching the skin. *Sensation* was intact, but he complained of pain all over the body, consciousness was not lost, but the patient was dull and very slow in answering questions. Hearing and sight were not affected. His bowels were constipated, but he had control over his bladder.

Temperature on admission was 97.8°F. Pulse, rather small, compressible, regular and 76 per minute, respiration rather shallow—17 per minute.

Treatment—Stimulant mixture with three minims of tincture of digitalis was ordered every hour. A calomel purge was given at once and a soap water enema ordered six hours afterwards.

Diet—Milk 2 pints

Progress of the case—

2nd June—Pulse ranged from 60 to 70 per minute, respiration from 16 to 22 per minute, sleep disturbed, passed urine several times, had scanty motion after enema.

3rd June—The patient could open his mouth better, but could not open his eyes, pain over the body less, difficulty in deglutition less, but saliva still dribbled from his mouth, could stand with help, reflexes increased, and spasms easily induced as before. Can move his arms better. Pulse and respiration normal. A specimen of urine examined, gave the following result—sp gr 1020, reaction, slightly acid, albumen present (trace), sugar, nil, bile pigment, nil.

4th June—The patient was better, could open his eyes partially, spasms less, no albumen in the urine.

Subsequent progress of the case was uneventful, and the patient was discharged cured on the 14th June 1901.

Remarks—(1) The snake was seen by the patient and his wife, it was said to be about a yard long and of dark colour.

(2) Only one puncture could be made out after careful search with a lens, this might have been due to one of the fangs having failed to hit, the bite being one sided.

(3) The onset of the general symptoms was slow and came on nearly nine hours after bite. This was probably due to the less poisonous character of the snake, and possibly also there being only one puncture, instead of two.

(4) Ligature of the part owing to the position of the bite was not possible, but excision of the part three hours after bite, possibly modified the severity of the symptoms which followed.

(5) During recovery, the power of the upper extremities returned earlier than that of any other part, and ptosis was the last to disappear.

(6) The temporary albuminuria was probably due to congestion of the kidneys during excretion of the venom.

A FEW SURGICAL NOTES

By HENRY SMITH, M.D.,

CAPT., I.M.S.,

Civil Surgeon, Jullundar

POISONED WOUND TREATED BY ANTISTREPTOCOCCIC SERUM

The compounder, while performing the *post mortem* on a case, scratched the radial border of the middle pharynx of his left index finger. He took no notice of it at the time thinking it unimportant, and consequently did not bring it to my notice. Next morning he complained of intense pain from the site of the scratch upwards, including the glands in the axilla. He had rigors and the lymphatics up the arm were visible as red inflamed lines. The gland at the elbow was also affected. I happened to have some desiccated antistreptococcus serum from the Pasteur Institute of Paris four years old in stock. We had none fresher. I digested a tube of it in distilled water and injected it into the subcutaneous tissue of the fore arm. The symptoms abated with such marked rapidity that I could only attribute it to the use of the antistreptococcus serum.

SNAKE BITE—A boy of about 10 years of age was brought to hospital said to have been bitten by a snake. His friends were very nervous about him and said that the snake had been seen and was a *khurab wala*. The boy had marks on the back of the hand which would pass for the marks of the fangs of a snake. I had the antivenene in hospital, my assistant was for using it promptly. As the boy was bitten half an hour before hand, or said to have been bitten, and was neither nervous nor had any symptom, I was of opinion that nothing was likely to follow and decided to wait and watch events, being ready to use the agent on the first evidence of constitutional effect of snake poison. No symptoms developed, and the antivenene was not used. The boy recovered. With regard to the use of antivenene in snake bite cases, the inference to be drawn from this case as regards the value of statistics is plain.

THE
Indian Medical Gazette

MARCH, 1902

A PRELIMINARY REPORT OF THE ROYAL
SOCIETY MALARIA COMMISSION

THE following is a brief résumé of the work done up to the meeting of the Nagpur Malaria Convention by Dr. Stephens, Dr. Christophers and Captain S. P. James, I.M.S., of the Royal Society's Malaria Commission. The report will be published by the Royal Society, but the following is taken from a preliminary report by Captain James to the Sanitary Commissioner with Government of India. It deals with the inquiries of the Commission in Calcutta, in four Bengal districts, in the Duars, at Kurseong and the cantonment of Mian Mir. The work consisted of examining specimens of blood from many children and adults, the dissecting of a large number of anopheles mosquitos and in Mian Mir a practical experiment in prophylaxis. It is premised that "endemicity" may be determined by the proportion of children and of infected anopheles in a given district, and it is concluded that what has been found true of Africa is also true of India. The "endemic index" has been found to vary from *nil* in Calcutta to 43, 55 and 72 in the Duars. In the Calcutta areas examined all the conditions usually associated with the development of malaria, including abundance of anopheles, were present. It is therefore remarkable that not one of the 140 children examined had parasites in the blood, and not one of 342 anopheles dissected was found infected. It is also said that at the height of the fever season (September) 42 more children were examined with the same results, no parasites, no enlarged spleens. Patients were examined in the hospitals, and parasites were only found (during relapses) in two cases of a chronic type. This is surely a very remarkable result, and shows that the question of relapses and chronic malaria needs further investigation. It has a most important bearing also on the treatment of these fevers by Quinine.

As it is, it appears as if malarial fever diagnosis were not the simple thing it seems, and apparently the Commissioners distinguish between (1) "*malarial disease accompanied by*

parasites in the peripheral blood, and (2) a form in which this diagnostic evidence is wanting." This latter somewhat cryptic form is said to be common in Calcutta and is of a grave type which passes into a true malaria cachexia, and the main indication presented by a microscopic examination being a large increase in the mononuclear leucocytes.

Proceeding from Calcutta a definitely increasing endemic index was found as the investigation was pursued towards the foot of the Darjeeling Hills, until at Nagrakata parasites were found in the blood of 72 per cent of children examined. This is in the Terai, a portion of India more comparable to Central Africa than are the plains of India.

It was also certainly demonstrated that the actual number of anopheles present is no criterion of the prevalence of malaria. In Calcutta the anopheles swarm—yet there was no evidence of malarial infection as far as examination of the peripheral blood of children may be taken as an index, on the other hand the percentage of children "infected" is very high in the Duars,—yet it was difficult to capture an anopheles.

This must be admitted to be very puzzling, and it may be that though some twenty varieties of anopheles have been found in India, yet they are not all equally able to convey the parasite. Though it would be a strange circumstance if the *Anopheles Rossii* should be found to be the one which was immune.

The conditions found at Mian Mir fall more into line. It was there found that 30 to 50 per cent of bazar children showed parasites in the peripheral blood, and the "spleen rate" was 70 to 90 per cent. Here we have two essential conditions,—viz, high percentages of "infected" children, and abundance of anopheles in migration channels, wells, &c, it is not therefore surprising that Mian Mir should have acquired a bad eminence for being one of the most unhealthy cantonments in India.

The above brief résumé of the preliminary report of the work of the Royal Society's Commission is sufficient to raise very keen expectations, and we look forward with interest to the full and detailed examination of the problems still to be solved. We can only earnestly hope that the Commission will continue their work for another year in India. They have done enough to show the extreme complexity and difficulty of the problem, and

before they go we hope they will be able to throw much light on the chronic forms of fever and cachexia which we usually call malarial. These are the cases that die, and these are cases above all that the so-far published reports of the Commission show to be little explored and to offer to the investigator a problem of surpassing interest and importance

THE ROBERT HARVEY MEMORIAL FUND

We have received up to date of going to press the following subscriptions for the Robert Harvey Memorial Fund, which we here acknowledge with many thanks —

	Rs
Major O Pinto, I M S	100
Lt Col D G Crawford, I M S	50
Major D M Moir, I M S	100
Mr L D Spencer, R O S B's	100
Major W R Edwards, I M S, O M O	50
Major F P Maynard, I M S	32
Major E Harold Brown, I M S	100
Capt J G Murray, I M S	30
Major H E Banatvala, I M S	50
Major J T Calvert, I M S	32
Capt E E Waters, I M S	32
Lieut W M Houston, I M S	10
Capt Drake Brockman, I M S	16
Capt R H Maddox, I M S	32
Major A H Nott, I M S	32
Lieut C C Murison	16
Lt Col R D Murray, I M S	100
Capt B C Oldham, I M S	32
Capt J Fisher, I M S	32
Capt J Jackson	25
Also promised, Major P W O'Gorman, I M S	50

LONDON LETTER

THE SMALL-POX EPIDEMIC IN LONDON

SMALL-POX broke out in London in August last, and since then the epidemic has been steadily on the increase. The number of cases admitted into the Metropolitan Asylums Board Hospitals up to the close of 1901, and treated to death or recovery, was 1,017. Of this number, 247 died or 24.28 per cent. The rate is unduly high on account of the number remaining under treatment. At first the majority of cases came from the parishes of St Marylebone and St Pancras, but subsequently cases were received from the whole of the 31 parishes and unions included in the Metropolitan Asylums District. The latest accounts indicate daily notifications of 30 to 50 cases, and 909 patients were under treatment on

Monday last. The deaths registered last week were 45 against 24, 24, and 28 in the three previous weeks. The epidemic has thus acquired considerable dimensions, and is still on the increase.

SMALL-POX AND VACCINATION

There can be no doubt that the insane anti-vaccinationist movement is responsible, if not for the outbreak, at any rate for the rapid spread and great bulk of the epidemic. Frantic efforts are now being made to stamp out the disease by vaccination and revaccination, but it is difficult in a short time to repair the defaults of many years, and so blind are some people to all truth and reason on this subject and so infatuated with prejudice that the "conscientious objector" is still in evidence. He is being dealt with less tenderly than formerly, but boards of guardians and school boards are composed largely of these pernicious faddists and are, if not actively, indirectly and passively obstructive. The statistics of these 1,017 cases show that about a quarter of them were either unvaccinated or doubtful. Under twenty years of age the proportion was a little more than half. The death-rate of the vaccinated was 14.21, of the doubtful 65.08, and of the unvaccinated 50.52. The corresponding figures for persons under twenty years of age were 187, 58.33 and 49.07.

REVACCINATION

The higher death-rate of the vaccinated at ages above 20 indicates the weakening of the protection afforded by infantile vaccination and the need of revaccination of adults for the purpose of renewing or strengthening the immunity. This is in accordance with previous evidence, and the experience of the small-pox hospitals furnishes strong positive proof in the same direction. Out of 14,800 cases received at these hospitals during a former epidemic only four well-authenticated cases were treated in which revaccination had been properly performed, and these were light attacks. Attendants in these hospitals are required to undergo revaccination on admission, and although they are brought into very close relation with patients and undergo continual risks of infection, very few of them have contracted small-pox. This outbreak ought to give a substantial impetus to both vaccination and revaccination and lead to improvement of both law and administration, both of which are at present lax and ineffective.

ASYLUM DYSENTERY

This subject which has been repeatedly noticed in your columns is exciting considerable attention in this country. A discussion is in progress at the Epidemiological Society of London which reveals many interesting experiences, and will probably result in the formulation of more rational views and the adoption of more efficient measures for the prevention of what is undoubtedly an important cause of sickness and mortality in English lunatic asylums. Having had personal experience of a severe outbreak of dysentery in a county asylum before I joined the Indian Medical Service, and having, during my stay in India, had abundant opportunities of becoming familiar with the symptoms and pathology of the disease as it occurs in the tropics, I have no hesitation in asserting my conviction that the so-called "ulcerative colitis" of English asylums is no other disease than dysentery. The epidemic to which I refer and another similar outbreak which took place in a neighbouring county asylum were both associated with and in all probability caused by the irrigation of land close to the buildings by decomposing sewage. The cases were mostly of a severe type, and the case mortality was very high. The disease disappeared in both instances when the irrigation was discontinued. An attempt has been made to connect this "ulcerative colitis" with nerve degeneration, but no positive proof has been advanced in support of this hypothesis, and the fact that some doctors and attendants have suffered during such outbreaks indicates that though insanity may impair resistance to infection and render the malady more severe and fatal when infection has taken place, nervous debility, derangement or degeneration cannot be considered as a direct factor.

We are still very ignorant regarding the causation of dysentery, but whether the term denotes one disease or many diseases due to one noxa or many noxæ there can be no question or doubt that fecal filth has to do with its origin and spread, and that in careful conservancy as regards water and food and sewage and in special care as regards the disposal of dysenteric evacuations reside the means and hope of prevention. English thought is tending in this direction, and the predominant feeling is that the disease ought to be called dysentery and dealt with in accordance with what we know of that disease dictates.

A BETTER KNOWLEDGE OF DYSENTERY NEEDED

There is great room and urgent need for further investigation regarding the nature and causation of dysentery. The researches of Shiga, Kiuse, Flexner, Durham, Councilman, Laffeur and others are very interesting and suggestive, but they have not by any means solved the problem of the etiology of dysentery, and although there is every reason to conclude from its circumstances, symptoms and morbid anatomy that it is due to a specific contagium, probably to a specific microbe, our knowledge regarding these is exceedingly imperfect and more inferential than positive.

K McL

15th January 1902

Current Topics.

A MEDICAL DIRECTORY FOR BENGAL

We are glad that Colonel T. H. Hendley, CIE, IMS, Inspector-General of Civil Hospitals, Bengal, has brought out a list of qualified medical practitioners for Bengal. This is a great step towards the due registration of all regular practitioners, and we hope that the other provinces in India will follow with similar lists.

The list contains the names of all Government medical officials in order of rank, the names of private practitioners, and the names of all local hospital assistants in charge of dispensaries. As far as possible information is given as to rank, titles, professional qualifications, authority granting the qualification with date, &c, and place of residence with official appointment, if any. In looking through the list of qualified medical officers we noticed a few misprints and omissions, but they are of a trifling kind. We hope that the list will be published at frequent intervals, and that it will in time become the recognised list of duly qualified men in India. We commend the list to the attention of administrative medical officers in other provinces.

THE PATHOLOGY OF SCURVY

THE *Lancet* (January 4th, 1902) contains an important and timely article by Captain George Lamb, IMS, of the Research Laboratory, Bombay, on the etiology and pathology of scurvy.

The subject of scurvy is one which has been frequently discussed in these columns, and it is a disease or symptom-complex which frequently finds a place in the returns of military and jail hospitals in India.

We have both in these columns and elsewhere frequently expressed the opinion that much of what is loosely called 'scurvy,' both in sepoy regiments and among prisoners in jails,

is not scurvy at all but a condition of *pyorrhœa alveolaris* or other local gum-disease, due mainly to neglect of the teeth.*

We are, however, well aware that genuine cases of scurvy are also not infrequently met with, both among prisoners and among sepoys on field service, and it is a disease that medical officers in India are always on the look out for and anxious to prevent.

In the paper above referred to Captain Lamb discusses three hypothesis which have been recently put forward, all of which have been discussed in these columns in previous years†. The first and most important is that put forward by Professor A. E. Wright, of Netley, that the scorbutic condition is a condition of acid intoxication, that is, a condition in which there was a marked diminution in the normal alkalinity of the blood plasma, the result of a dietary of food stuffs which contained a large excess of mineral acids over bases, a dietary, in fact, of meats, especially salted meats, and cereals to the exclusion of green vegetables, tubers and potatoes. In a later article (*Lancet*, August 25th, 1900, p. 565) Professor Wright gave examples of seven cases of genuine scurvy in invalided soldiers, in whom the alkalinity of the blood serum was strikingly reduced below normal, and in whom a marked amelioration of the condition followed upon the exhibition of lactate of sodium and similar substances.

The next hypothesis discussed by Captain Lamb is that put forward in our columns (October 1900, p. 350) by Captain W. Glen Liston, I.M.S., in which the so-called scorbutic symptoms were supposed to be dependent upon the presence in the intestines of the parasite *ankylostoma duodenale*.

Finally, Captain Lamb dismisses in a few words the theory of the ptomaine origin of scurvy put forward by Mr. Jackson and Dr. Vaughan Hailey as the result of Arctic experiences.

Captain Lamb then goes on to put on record his observations on eleven cases of scurvy, which he recently had the opportunity of examining in the unhealthy jail at Thana, near Bombay.

He shows that in these cases the diet was a satisfactory one as regards vegetables, and as meat was only issued once a week, the cases afforded no support to the ptomaine theory, and in harmony with the inferences based upon a consideration of the dietary were the results of the blood examination. No diminution in the alkalinity of the blood was found in any of these cases, nor in six other cases examined in the Bombay hospitals. This points definitely to the conclusion that Professor Wright's hypothesis of acid intoxication does not explain the scurvy as seen in Indian jails, a conclusion which some

clinical experience of our own entirely agrees with, for in a series of cases treated by the drugs recommended by Professor Wright, no improvement took place in any.

Nor can Captain Lamb's examination of these cases from the point of view of the intestinal parasite, *ankylostoma*, lend any support to Captain Glen Liston's hypothesis.

It would appear, therefore, that none of the above hypotheses will explain the cases of scurvy which appear from time to time among the cereal-eating natives of India, and we must conclude with Captain Lamb "that more than one etiological factor and pathological condition underlies the symptoms clinically known as scurvy."

The subject is one of great importance, and one worthy of further investigation in India. In Bengal, at any rate, it was the almost unanimous opinion of medical officers (see *Jail Administration Report* for 1894, also *Manual of Jail Hygiene*, 2nd Ed., p. 114) that the teeth and gum symptoms so commonly seen during unhealthy autumn seasons are neither true scurvy nor in any degree amenable to lime-juice.

ICE AS A CONVEYER OF DISEASE

THE approach of the hot weather in India renders the reproduction of an article from the *Boston Medical and Surgical Journal* (November 21st, 1901) as the question of ice as a possible conveyer of disease a timely matter.

It is well-known that ice has been made responsible for various outbreaks of disease, especially typhoid fever, notably in the case investigated by the Massachusetts Board of Health in 1875, and it is pointed out in Notter and Firth's *Hygiene* (p. 101) that ice examined in Berlin by Heyroth contained numerous micro-organisms per cubic centimetre, from 171 to 14,000 in several samples. Munson also (*Military Hygiene*, p. 104) notes that "prolonged freezing has no marked effect upon the vitality of the typhoid bacillus, though alternate freezing and thawing have." The most recent contribution to this question is, however, of a more reassuring nature. Dr. H. W. Hill, in the *Boston Journal* above quoted, reports the result of his investigations in the Boston Board of Health Bacteriological Laboratory. He points out the difference between natural and artificial ice. With regard to natural ice he states that "only two methods of pollution need be considered,—the freezing of the ice from polluted water, and the flooding of the ice, once formed, with polluted water with subsequent freezing of the same."

The reduction of typhoid bacilli in water by freezing has been carefully worked out by Sedgwick, Winslow and by Park. "Beginning with a certain number of typhoid bacilli in ice, after three weeks the percentage dead is the same as the percentage purification in the

* See Review of Major Andrew Buchanan's book on *Diseases of Gums*, I.M.G., Sept. 1899, pp. 341 and 314.
† I.M.G., Vol. 33, p. 391, Vol. 35, p. 380, Vol. 35, p. 261.

Lawrence filter, and equivalent to a bacterial efficiency of 99.5 per cent. Hence, ice known to be definitely infected with typhoid bacilli might, after standing three weeks from date of freezing, be consumed with no more danger than that involved in drinking infected water after efficient filtration. Moreover, Winslow has shown that typhoid bacilli in water kept just above the freezing point for 24 hours are reduced about 90 per cent, thus furnishing an additional safeguard."

As regards artificial ice (which chiefly concerns us in India) much will depend upon the methods employed and the ice machine used. Dr Hill's experiments were with a Boston machine, in which "the exhaust steam from the engine (supplying the power for compressing the ammonia, &c) is condensed by passing through pipes over which water is running." This water is then heated in boilers to drive away the air, and then filtered before being made into ice. It is obvious that the boiling and distillation of the water in this way must sterilise it completely, and any typhoid bacilli must "unquestionably be destroyed." If, however, infected (say, by a typhoid case among the employes) this freezing would be less efficient as a safeguard than in the case of natural ice, for no mechanical throwing out of the bacteria can take place, and moreover the ice is used soon after manufacture.

As, however, the ice machines in general use in India do not, as far as we know, use condensed water, it is obvious that the sterilisation such as takes place in the Boston machines will not help us much in India, and as ice in the hot weather is almost always used within 24 hours of its manufacture, it is obvious that our safeguarding entirely depends upon the purity of the water used for the making of the ice. If all such water could be boiled before use in the ice machines a very large degree of safety could be secured.

The discussion at least emphasises one point, and that is, that the mere freezing of possibly polluted water is no safeguard at all, and that typhoid bacilli, and possibly also the cholera vibrios, can survive for several days in ice.

INSTANCES OF ANOPHELES AND NO MALARIA

In the course of our reading lately we have come across several instances in which it seems as if the whole etiology of malaria was not summed up in the presence of the anopheles. We do not for a moment impugn the truth of the dependence of malaria upon the anopheles, but only to point out that we are far from yet understanding the whole epidemiology of the disease. There are two points which seem to us to require more explanation and elucidation than has yet been given, viz (1) the varying amount of malaria from year to year, and in places where apparently all conditions are favourable for the propagation of the disease, i.e.,

anopheles and introduced malarial cases, yet no epidemic, or widespread prevalence. (2) How is it that though anopheles may be present and occasional malaria cases are introduced yet malaria in several localities nowadays is practically unknown?

As examples of the first point we may refer to the varying incidence of malaria in numerous districts in India—one year is very bad, in another year but few cases occur. This has not been explained. Is it due to variations in rainfall and consequently variations in the number of mosquitos, or are there other yet unknown conditions which govern the spread of the disease by means of the anopheles? As examples of the second question, we may quote the case of the favoured Tuscan Valley, described by Celli, and referred to in our last issue. Here every condition apparently required by the mosquito theory was present, yet there was no malaria. Other similar examples may be quoted, e.g., in Zealand M. M. Vander Scheer and Van Beikelone have shown (*Bulletin de la Societe de Med de Gand*, 1901) that though anopheles maculipennis is abundant, yet the malaria which was one time very prevalent has largely disappeared, and only is found in small outbreaks at rare intervals. Again Mons E. Seigrist (*Annales de l'Institut Pasteur*, XV, pp 811-816) found anopheles maculipennis and anopheles bifurcatus present in large numbers in districts (*Lorient, Seine et Marne, Seine et Oise*) whence malaria has disappeared (Nuttall).

Then there is the case of the fens of Lincolnshire where anopheles is to be found (in as great abundance as ever, in Professor Ray Lancaster's opinion), yet though malaria cases must have frequently been introduced in recent years, no spread of the disease has taken place.

It seems to us that a study of the conditions which prevent a spread of malaria, in spite of the presence of anopheles and malarial fever cases, would be of the utmost value and be a guide to us in the great task of the prevention of malaria.

THE SALE OF COCAINE IN BENGAL.

We have several times called attention to the spread of the habit of cocaine eating among Natives of Bengal, and the following notice shows that the Government of Bengal is fully alive to the harm done to the youth of Bengal by this pernicious practice—

"Cocaine having been declared an intoxicating drug under Bengal Government Notification No 1819 T F, dated the 23rd October 1900, and having thereby become an excisable article, the sale of it without a license has become illegal under section 11, Act VII (B O) of 1878, and punishable under section 53 of the said Act. It is now hereby notified for general information that the sale of cocaine will not be allowed at all except for bona fide medical purposes, and that no licenses for the sale of it will be given to any persons other than approved druggists and chemists. Druggists and chemists desiring

to take out licenses should apply to the Collector, who will grant the licenses under certain specified conditions to duly approved persons and firms. Druggists and chemists will be allowed time up to the 1st March 1902, to obtain their licenses. After that the law will be put into operation against druggists and chemists, as well as against any other persons who may be found selling cocaine without a license."

In another column a well-known Calcutta physician gives his experiences in the treatment of the cocaine habit, and forcibly illustrates the difficulty which attends its cure, as well as shows the extent to which the habit has spread among the better classes in Bengal.*

THE MADRAS BRANCH, B M A

THAT the Madras Branch of the British Medical Association is in a flourishing condition the transactions published in December are a proof. We give in full the important discussion on liver abscess and its operative treatment, which we regard as the most important contribution to the surgery of this disease which has appeared within recent years. In other columns we also publish two interesting cases of tumours by Major R. Robertson, I.M.S., and Captain W. J. Niblock, I.M.S., of the Madras Medical College. Another interesting case reported by Lieutenant-Colonel J. Maitland, I.M.S., M.D., shows the value of making an incision into the kidney in cases of renal tension. The case is exactly similar to those recently published by Mr. Reginald Harrison of London, where a renal calculus was suspected from the symptoms, yet not found at the time of operation, nevertheless a permanent cure resulted. Major D. Simpson, I.M.S., also reported a very interesting case of continued fever the result of a mauling by a panther, which he attributed to the putrefactive condition of the animal's mouth, though Captain Cornwall, I.M.S., believed that the mouths of carnivorous animals were not dirty, but rather quite clean. The point is an interesting one as tiger and panther wounds are generally followed by blood-poisoning, and this is usually attributed to the dirty condition of the teeth and claws of such animals.

THE second number of the new "Journal of the Association of Military Surgeons" of the United States Army has reached us. We are glad to see that it has been determined to issue this magazine monthly not quarterly. The table of contents reveals four original articles, five reprints and translations, a medico-military index (which gives a list of all the articles on matters of medico-military interest in the medical literature of many languages), several editorial articles, and reviews of books, &c. The number is a good one and will be, we

believe, much appreciated by military surgeons of all countries.

Major L. L. Seaman writes strongly on the necessity of providing Native troops for the protection of the new colonial possessions of the United States, and speaks enthusiastically of the way Colonel Hamilton Bower, I.S.C., and his officers have transformed the Chinaman into the soldier of the now disbanded Wei-Hai-Wei Regiment. Incidentally he refers to the blunders which were responsible for the invaliding of such numbers of American soldiers in Cuba and the Philippine Islands. These blunders "to the eternal disgrace of our medical and commissary departments" were due to rationing men in a tropical climate on "rich meats" at a time when entire regiments were suffering from stomach and intestinal catarrhs. As in the Civil War of the sixties "beans killed more than bullets" and a diet which largely consists of "rich meats, pork and beans" is certainly not the food for soldiers in the tropics, with a value in caloric units much greater than that of an English prize-fighter.

The proper dieting of British soldiers in hot climates and of Native soldiers in cold climates is one of the utmost importance, and if we are to judge by some recent experiences in Chitral the matter is one for the medical officer to decide, not the supply officer, with his rigid regulations and slavish adherence to dates.

In another article Captain Munson, U.S.A. (whose *Military Hygiene* has made his name well known), writes on some defects in the drugs supplied to Field Hospitals, but as these drugs are supplied in tablet forms they are so immensely superior to the clumsy bottles of our Field Hospitals, and we are inclined to think Captain Munson's remarks even hypercritical. We wonder what he would say to those big bottles of "antiseptic solution"!

Bugadier-General J. F. Calef has an article on examination for recruits, which is well worth the study of the military surgeon. Instead of the old-fashioned "vision test dots" which are quite obsolete for modern riflemen, General Calef uses types of the Snellen pattern to be read at 20 feet, we also note that he gives a table of physical proportions, and the following rule, which is somewhat similar to our own rule for calculating the standard weight of Bengal prisoners (*Indian Medical Gazette*, October 1897), viz., "calculate two pounds for each inch of height up to 67 inches and add seven pounds for every inch above that height." We can strongly recommend this journal to military surgeons.

AMONG a series of interesting reprints on many tropical diseases which we have received from the Medical Society of Gand in France, there is one which deserves especial mention with regard to the ever-recurring question of the

* A few days ago a boy aged 14 was sent by one of the Presidency Magistrates to the Central Jail, Alipore, his "previous occupation" was noted on his character slip as "Cocaine eater!"

extent of the existence of typhoid fever among the natives of India. The paper is written by Mons J Brault, of the Algiers School of Medicine, the author of the well-known *Maladies des Pays Chauds*. He points out that (as in India) in Algeria the opinion of experienced medical men has been that typhoid "is much less frequent amongst the indigenous peoples." The question indeed has been discussed exactly on the same lines as has been done in India. The comparative immunity of the adult Arab is, says Dr Brault, admitted, there is only dispute as to the reason why this is so. One party maintains that the Arab is immune to typhoid for the same reason as the Negro is immune to yellow fever and blackwater fever, the other party declares that the Arab appears immune only because he suffered from the disease in infancy.

More recently in Algeria, as in India, the question has been sought to be solved by the use of the serum method of Vidal. H Vincent, in May 1898, reported that of 23 native adults examined in no instance was a positive Vidal reaction obtained. Lebon, again in 1899, out of 13 examinations only obtained one agglutination. "Convinced," says Dr Brault, "that the solution of the problem lay in the examination of the blood of young natives," he began to make these tests and in his first ten cases got eight negative results, one positive, and one doubtful. In the next series of cases in children from four to fourteen years of age he got similar results, viz, one positive, three doubtful, and 26 negative, or a total of 34 negative, four doubtful and two positive, out of 40 cases.

He considers therefore that while the rarity of the disease is admitted in adult Arabs, the results of these tests lend no support to the view that this adult immunity depends upon a prevalence the disease in childhood. We would welcome a series of observations on the reaction by Vidal's test of the blood of a number of native children in India.

THE new *Journal of Obstetrics and Gynaecology of the British Empire* has reached us. It is in able hands editorially, and the editors are assisted by a long list of collaborators, among whom we notice Lieutenant-Colonel W Coates, I MS (not R A M C, as given in list) of Lahore, Lieutenant-Colonel Peck, I MS, of Calcutta, Lieutenant-Colonel Sturmer, I MS, of Madras, and Dr Kedai Nath Das, of Calcutta. The first number is an admirable one, and if succeeding numbers are of equal interest and value, the success of the new journal is assured. The publishers are Messrs Balliere, Tindall and Cox, and the annual subscription, 25s post-free.

IN two interesting papers in the January issue of the *Caledonian Medical Journal*, Dr J S Warrack says that the proportion of men

inoculated varies with the type of soldier. The Yeomanry and Volunteers are most inoculated and "have benefited accordingly," the regulars next, and the militiamen least.

Regarding the much disputed question of "simple continued fever," Dr Warrack describes a form of fever in which the initial symptoms are shivering, headache and rise of temperature, bowels are regular, no pink spots, no iliac pain, no other sign of enteric fever. Temperature, normal in mornings, elevated in evenings, and may continue so for weeks. Change of climate brings about a cure. This form of fever seems to occur in men who have been sleeping in the open, and in the wet and cold.

WE desire to correct a mistake made by our reviewer in his otherwise favourable notice of Dr A H Carter's *Elements of Practical Medicine*. It was there said that no allusion was made to the mosquito theory of malaria, this is quite a mistake as may be seen by referring to the top of page 101 of the book. We regret the mistake as we had nothing but praise for this admirable book for beginners in the study of medicine.

WE are glad to see that the Sanitary Commissioner of the North-West Provinces and Oudh has issued a circular on the diffusion of the malarial fevers by means of mosquito with suggested measures for their prevention.

A SIMILAR circular was issued a year or so ago by Lieutenant-Colonel King, I MS, the Madras Sanitary Commissioner, and we understand that Major Dyson, FRCS, I MS, has issued a similar one for Bengal. This is what is wanted. These circulars are not so much intended for medical officers as for Municipalities and District Officers. If our District Officers who are in charge of the Municipalities and District Boards really grasped or realised the truth of the connection between anopheles and malarial fever, they would soon see that some public money was diverted in this direction. It is the duty of all civil surgeons to impress these views on all District Officers and Municipal Chairmen. We want them to grasp the matter, not as an interesting scientific phenomenon, but as a practical every-day fact.

THE health of the Bengal Jails will probably be found to have been good during 1901, as the following figures indicate—Alipore, 17 per mille, Presidency, 15, Rampore Baulia, 14, Buxai, 13, Bhagalpur, 34, Dacca, 14, Hazaribagh, 23, Berhampur, 78, Cuttack, 30, Chittagong, 32; Faizpur, 16, Jessore, 24, and Midnapur, 36.

THE Government of the Federated Malay States has issued a circular giving some details of the Medical Research Institute recently estab-

lished under the direction of Dr Hamilton Wright at Kuala Lumpur, the capital. The medical department is fully equipped for special and general pathological work, and for the scientific study of clinical medicine, a mortuary with a refrigerator chamber has been provided, a feature which the Government of India might well imitate for our pathological departments. There is also a well-equipped chemical department and a photographic studio and a good working library.

The Government of the Malay States is to be congratulated on their enterprise in establishing such a useful institution.

As we go to press we have received the Annual Report of the Sanitary Commissioner with the Government of India. We will notice it at length in next issue. The report, though showing signs of the prevailing compression, is full of information, and is a valuable and up-to-date résumé of matters, medical and sanitary, in India.

At a meeting of the Faculty of Medicine, Calcutta University, held at the Senate House, on Wednesday, the 5th February 1902, Dr Sures Prosad Saibadhikari moved, and Dr K C Bose seconded, the following resolutions, which were carried unanimously—

(i) That the Faculty of Medicine of the University of Calcutta places on record its sense of the great loss which it has sustained by the untimely death of Surgeon-General R Harvey, I.M.S., M.D., LL.D., F.R.C.P., D.S.O., C.B., V.H.P., Director-General of the Indian Medical Service, and its appreciation of the eminent services which he rendered to the profession generally, and especially in the department of Midwifery and Gynecology.

(ii) That a copy of the above resolution, together with a letter of condolence and sympathy, signed by the President of the Faculty of Medicine, be sent to Mrs Harvey.

DR STEPHENS and Dr Christophers of the Royal Society Malaria Commission, write to us *apropos* of our having called the wearing of thick breeches and putties as a precaution against mosquito bites "ridiculous." They state that they adopted this precaution while living in the bush in S Leone, with native huts around them, and at a time when dissection had showed that every tenth anopheles contained sporozoites, and they had caught as many as fifty anopheles sitting outside their mosquito nets. They do not recommend these precautions when living in other places, as in the towns of the West Coast, &c.

We are glad to have this explanation, we can well believe that under such special circumstances the wearing of cold breeches and putties was a wise and right precaution. Our impression was that it was recommended for universal use on the West Coast, and we wondered if the

wearing of such thick clothes was possible in a warm damp climate in the tropics (See notice of Liverpool Nigeria Expedition's Report, *I M G*, February, 1902, p 70).

Reviews

The Surgical and Medical History of the Naval War between Japan and China (1894-5). Translated from the Japanese under direction of Baron SANEYOSHI, F.R.C.S., Eng., and S. SWZUKI, M.R.C.S., Tokio. Tokio Printing Co., Ltd, 1901.

THIS large and handsome volume by Baron Saneyoshi, F.R.C.S., Eng., the Director-General of the Medical Department of the Imperial Japanese Navy, is an able and important contribution to the medical history of war, a department of medicine to which but few contributions have been made. Indeed naval war may be said to have no medical history at all, the lessons of Trafalgar and Lissa, and of the war between Chili and Peru, have been lost to us. For this reason, therefore, among others, this volume which gives a detailed history of the naval war between China and Japan is of special interest and value.

The first impression gained by the reader seems to us to be that naval war is even more terrible than land war, and naval medical men have even a more difficult task to do than their confrères on land. Baron Saneyoshi recognises this when he writes, "a naval battle is a very formidable thing, much more so than a land fight, for it consists of either firing big guns, ramming, or the discharge of fish-torpedoes, by which a whole ship may suddenly be destroyed or sunk, even when it is simply hit by shells without exploding. Ship's planks, furniture &c, are destroyed, and many lives are lost, or injuries sustained from the flying splinters. When the shells explode fearful damage results. Occasionally ships hit by shells escape without injury to life, but this depends upon the part of the ship hit."

In one ship, the *Hayer*, one shot "destroyed her surgery utterly and killed or severely wounded the whole of her medical staff."

The engagements whose history is chronicled in this volume are the naval battles, Phung-do, and Yalu and the attacks on Tan-chow, Wei hai-Wei, the Pescadores, and certain other bombardments. Much of the book is devoted to the details of the great fight at Yalu which lasted from noon till 5 P.M. and ended in the almost entire destruction of the Chinese ships. Out of 3,826 men engaged in that battle on the Japanese side, 90 were killed and 208 injured by 134 shells. In the whole war the Japanese lost 372, and most of these wounds were from fragments of shells or splinters of wood and iron. The most fearful of the injuries incident to naval warfare

are the terrible burns, some of which are well illustrated in the volume before us. Naturally suppuration was extremely common, in one ship a shot had destroyed all the medical and surgical appliances, and the wounds had to be dressed with rags and machine oil.

After giving accounts of the different engagements the report discusses the causes of the wounds and then classification under the following heads—contusions, contused wounds, blind and penetrating wounds, perforated wounds, lacerated and mutilated wounds, burns and scalds, hæmorrhage, nervous symptoms, suppuration, gangrene, erysipelas.

Next chapter, VI, treats of the management of the wounded, and Baron Saneyoshi decides that as a rule two surgeries should be established, one at either end of the ship, this plan has the drawback of dividing up the medical staff, but, on the other hand, a single surgery, if destroyed by shot as on board the *Hyer*, leaves the ship's crew entirely without the medical aid so urgently needed. We note that in the actual engagement the various stretchers were found cumbersome and troublesome, and the wounded were carried below by hand.

Another portion of the volume treats of the enteric fever, which, however, showed *no increase* over the ratio for peace times, a happy result very creditable to the medical officers concerned. The description given of the very thorough disinfection of one of the infected ships is worthy of study by all military and naval surgeons. There was a slight outbreak of cholera, too, which took origin, it was supposed, in certain hired transports. There is little to note about the remarks upon dysentery except that the contagious and infectious nature of the disease is distinctly recognised and measures for its prevention taken accordingly. The brief notes on malaria contain nothing of special interest. Space forbids us to linger upon the excellent account of the decline and disappearance of *Kak'ke* or beri-beri from the Japanese navy.

To conclude, we heartily congratulate Baron Saneyoshi and the Surgeons of the Imperial Japanese Navy on the production of this unique and valuable book. It is the first medical history of a naval war and may long remain the only one, as the losses on the side of the United States Navy in the battles which resulted in the annihilation of the Spanish Navy were too trifling to require elaborate record, and the Spaniards are scarcely likely to have the information necessary to write the history from their point of view.

The volume is well printed and contains numerous illustrations and plans.

The book is in some respect a companion volume to the "Surgical Experiences of the S African War" by Mr G. H. Makins, and can be strongly recommended to all naval and military surgeons.

The Accessory Sinuses of the Nose By LOGAN TURNER William Green and Sons, Edinburgh

It is a pleasing sign of the times that monographs of the type of the volume under review have begun to be issued, for our English medical literature, however rich in publications of clinical research, has hitherto been comparatively poor in publications that evince more than second hand knowledge of the minutest details of anatomy on which advance in surgical practice for the most part depends. It is only within the last decade or two that our contributions in this direction have perceptibly increased, and it is therefore we welcome in book form Mr Logan Turner's original articles on the frontal and other accessory sinuses of the nose.

By far the major portion of the book is given up to an accurate account of the anatomy of the sinuses based on original dissections beautifully illustrated from photographic plates and enriched by further illustrations borrowed from Prof Symington's studies in frozen sections of the body. A more lucid and yet concise and full account of the anatomy of the nose it has never been our fortune to peruse. It has moreover been enriched by an account of the author's studies in the comparative anatomy of the sinuses in various races of man, studies which, however much indicated for completeness, seem not to have been productive of any practical results. We notice that in the course of this part of the book Mr Turner goes out of his way to animadvert on Gall's phrenological teachings. It is unfortunate that Mr Turner seems not to know that Gall himself was perfectly aware that the separation of the inner and outer tables of the skull created difficulties in the appreciation of the size of the underlying portions of the brain. It is time that more justice should be done to Gall than to confound him with the charlatans who appropriated his doctrine to earn an ignoble living.

Mr Turner has not contributed anything new in his chapter on the transillumination of the sinuses, but this chapter is nevertheless a faithful and accurate account of what can be done both clinically and for purposes of research by this method of study.

Something practical has been aimed at in the building up of this book, and therefore when the reader has got to the end of the excellent monograph on the anatomy of the sinuses he meets with a final chapter which gives him an ample account of the inflammatory diseases of these sinuses, their pathology, clinical symptoms and their treatment. This chapter is, if anything, too short, and might well be expanded so as to be a fitter sequel to the luminous chapters that precede it and make one expect more. We congratulate the author on his excellent work, and the publishers on the magnificent way in which they have produced the book.

Text-Book of Diseases of Women By C B PENROSE, M D Third Edition Illustrated Philadelphia W B Saunders & Co, 1900 Price, 16s

WE have in our time read many text-books and treatises on the subject of Diseases of Women, but in few cases have we been better pleased, and the time more profitably spent than in reading the third revised edition of Dr Charles B Penrose's book

The book is written mainly for the medical student, and successfully presents the best teaching of modern gynecology. In most instances the student is not bewildered by being presented with many plans of treatment, but rather his attention is directed to one method which is universally approved or which has been found useful by the author. We are glad to see that the book has not been padded out with chapters on anatomy, physiology, and pathology, which too often make up a considerable proportion of such text-books. The necessary information on such subject the student has got in other books, and as a matter of fact these chapters are generally skipped by readers. The volume is beautifully and completely illustrated, it is printed in good large type on good paper, altogether it is a handsome and useful text-book which can be well recommended to both students and practitioners

The Pathology and Treatment of Sexual Impotence. By VICTOR G VECKI, M D Third Edition, revised and enlarged Philadelphia and London W B Saunders & Co, 1901

THE monographs on the subject of impotence, which have appeared in the English language, are few, and of them few indeed are calculated to be of service to the general practitioner. Vecki's work is one written by a practising physician for practising physicians, and thus it has now attained to its third edition in English dress, having originally appeared in German in 1889.

It contains a concise account of the most recent contributions to our knowledge of a most important, albeit in certain quarters neglected, factor in life—genital physiology, and in clear language treats of the etiology, semeiology, and therapeutics of impotence. Undoubtedly the author's views regarding the significance of pollutions, and the due exercise of the genital organs, will not meet with unanimous approval, but, set forth as they are in manifest good faith by one of vast experience, who is evidently an earnest seeker after truth, they merit consideration, if only for the reason that they are held by many men—if actions may be taken to be the exponents of opinion.

What has struck us most, on reading this work, is the definition therein given of sexual excess—"Coition for which an effort is required." Here in a few words we have a complete answer to a difficult question, and a real aid in practice.

Since in India a man's procreative power is of importance to him, not only by reason of the happiness which it entails in this life, but also because without it he cannot hope for bliss in the other world, it behoves every medical man in India to have a sound knowledge of the symptoms and treatment of impotence, and this he will derive from a careful perusal of Vecki's work.

A Practical Guide to the Administration of Anæsthetics. By R J PROBYN WILLIAMS, M D Longmans, Green & Co New York and Bombay Price 4s 6d net

THIS is a handy little book on anæsthetics of some 200 small pages, being intermediate in its scope between the large works of Hewitt and Dudley Buxton on the one hand and the small guide of David on the other. General considerations and the difficulties and dangers of the administration of anæsthetics are first dealt with, and then the different drugs in common use are separately taken up, the final chapter dealing with the subject of local anæsthesia, in which we note Schleich's infiltration method is described, but not recommended on account of the length of time required, the greater risk of suppuration following and the frequency of severe shock. The book is plainly written and the principal forms of apparatus are sufficiently illustrated. The choice of an anæsthetic in different subjects and operations is dealt with separately. Ether preceded by nitrous oxide gas is recommended between the ages of 10 and 60, chloroform up to the age of 3, and A C E mixture at other ages. No reference appears to be made to the necessity for the use and greater safety of chloroform in the tropics. A good index completes a useful little manual.

Saunders's Medical Hand-Atlases Bacteriology by LEHMANN and NEUMANN, Vols I and II. From the second revised German edition with 600 coloured lithographic figures and 500 pages of text. Price 21s. net

THE issue of a second and revised edition of this well known and most useful laboratory guide will be welcomed by many workers who have found the former edition of the greatest value in identifying organisms which may have been isolated. The first volume contains 69 coloured plates, each containing eight to ten figures illustrating the appearances of the growth of organisms on different media, and in plate cultures, as well as their microscopical characters. The common saprophytic as well as pathogenic species are included. Nine new plates have been added to the present edition, including one of the bacillus pestis, the natural classification of the former edition being retained. The second volume contains 500 pages of text, which is divided into general and special bacteriology, the first relating to the general conditions and activities of bacteria, while the latter deals with

their classification and systematic description, including their distribution and pathogenic properties. This volume is a perfect mine of information, and is very well up to date, recent work on the plague bacillus and on the variability of the comma bacillus of cholera, for example, being given, as well as the varieties of organism related to the bacilli of tubercle and diphtheria, which have attracted much attention of late. Altogether the book is one which should be a constant companion worker in the field of bacteriology.

Healing of Nerves By CHARLES A. BALLANCE and PURVES STEWART. Messrs Macmillan & Co. Price 12s 6d net.

THIS is a most elegantly got up and beautifully illustrated monograph on an investigation of the microscopical changes which take place during the repair of nerves, with or without direct union by suture, based on experimental work performed in the Brown Institute, Vauxhall, on dogs, cats and monkeys, Weigert's Stoeje's and Golgi's methods of staining being principally used. The result of the experiments has been to convince the authors that the most generally held view that the new axis cylinders, which appear in the regenerated distal segment, are solely derived from outgrowths from those of the central segment is not correct, and lead them to support the other view that the regeneration is brought about by means of the activity of the neurilemma cells of the distal segment, which first form spindle-shaped cell which elongate and secrete both the new medullary sheaths and axis cylinders, the elongated cells fusing to form these, the whole process taking some four weeks to occur. The central axis cylinders only joined on to the regenerated distal ones, the rapid recurrence of sensation in some cases of secondary union of severed nerves thus being easily explained. The bearing of this view on the neurone theory is also discussed briefly, the application of it to the peripheral nervous system being disputed by the authors. This thesis is worthy of careful study by those interested in the surgery of nerves, which is of special interest at the present time on account of the frequency of injuries to these structures by modern bullets.

Gonorrhoeal Arthritis, its Pathology, Symptoms and Treatment. By L. VERNON JONES, M.D. London H. K. Lewis, 1901, pp. X and 52. Cr 8vo. Price 2s 6d.

THIS booklet well summarises our present knowledge of the disease variously known as gonorrhoeal arthritis, gonorrhoeal rheumatism, and urethral arthritis. The first is the best term, as it expresses more of the truth than the others, though not all. Rheumatism it is not. The arthritis is one of the local manifestations of the systemic infection by the gonococcus, just as endocarditis is one of those in acute

rheumatism. Emphasis is laid upon this by the author and the rarity of pure infections by the gonococcus alone pointed out. In only two out of 58 cases did Foulerton find the gonococcus alone.

König's classification into two types, synovial, including hydrops and empyema, and fibrous, including sero-fibinous and phlegmonous forms, is given as being the best. It is pathological, but best explains the clinical varieties seen. As regards treatment Dr. Vernon Jones prefers injections with Zeevan's syringe for the cure of the metritis. He thinks the prejudices against injections have arisen from surgeons using too strong injections, or solutions astringent rather than antiseptic, or from then using the ordinary syringe which simply carries pus further up the canal instead of washing it out, and finally from the use of full sized catheters for curing gleet which is fraught with danger, he thinks. He uses biniodide of mercury, 1 in 10,000 which does not coagulate the albuminous constituents of the discharge. Internally salol, iodide of potash, guaiacum and nucleic acid are mentioned. Urotropin is not. The little book is a useful epitome and gives us in small compass what would have to be searched for in various articles scattered in literature.

Elementary Ophthalmic Optics, including Ophthalmoscopy and Retinoscopy. By J. HERBERT PARSONS, B.S., B.Sc., F.R.C.S., Curator, Royal London (Moorefields) Ophthalmic Hospital. London J. & A. Churchill, 1901, p. 162. 6s.

THE author modestly states in his preface that this book is intended to supply the student of ophthalmology with all the optics which is necessary for an intelligent knowledge of the subject, and hopes it will prove a useful addendum to such practical works as Morton's *Refraction of the Eye*, Hartnidge's *Refraction*, &c. The author's intention is so well carried out that we are convinced every student of refraction should make himself acquainted with Mr. Parsons' work. It is exceedingly well arranged and clearly expressed, and the mathematical problems are stated with such lucidity that no one with a fair knowledge of mathematics can fail to follow them. The work may be said to stand midway between Hartnidge's *Refraction* and Donders' big work, while improving in many respects upon both. The chapters upon the ophthalmometer, the ophthalmoscope and retinoscopy are particularly valuable. A bibliography of the best works on ophthalmic optics is a useful addition. Altogether we regard this as quite the best book of its kind in English at the present day on a subject of unusual difficulty.

A Text-Book of Zoology By G. P. MUDGE, B.A., B.Sc., Lond., F.Z.S. London Edward Arnold. 7s 6d.

THE author has succeeded in compressing into this little work of 403 pages an array of fact

and mass of detail seldom met with in a book of twice its size, and this he has done without sacrificing in any material way clearness or illustration. But if the book has a fault it is this—it is almost too condensed—approaching more the note-book than the text-book in style, and may thus have one of the faults of the note-book—it cannot be read by itself. But to the student who has read other—and simpler books—or has paid attention to his lectures—this book can be strongly recommended. The greater part of the book is taken up with comparative anatomy into which the author has gone with unusual thoroughness in a book of this size, and is to be congratulated on the result. The tables on pp 116, 143 and 193 are particularly worthy of mention, and should prove highly useful to the examination student. The chapters on heredity and variation are very strongly written and represent very fairly modern scientific opinion.

Both type and paper are good, and the book is crowded with diagrams of the best sort, but little space being wasted on "zoological pictures."

The Cure of the Morphia Habit without Suffering By OSCAR JENNINGS, M.D. (Paris) London: Ballière, Tindall & Cox, 1901. Second Edition, Revised and Enlarged, pp 220 + vii Cr 8vo. Price, 3s 6d net.

THE present little volume is the second and revised edition of Dr Oscar Jennings' book on the cure of the morphia habit without suffering or what he calls physiological demorphinisation. Dr Jennings' practice is in Paris, a city where the unfortunate habit is only too common, and his book is based on personal experience, as well as his experience on behalf of his patients.

The first chapter gives an analysis of the craving, for he recognises that the end aimed at is not so much suppression of morphia as suppression of the desire for it. The three means of treatment discussed by Dr Jennings are, heart tonics, bicarbonate of soda and hot-air baths, these with his special method of rectal injections constitute his plan. The book is well worthy of study by any medical man who has such a patient. It is clearly written, brief and to the point.

A Manual for Midwives in Bengal The Harasundara Press, 98, Harrison Road, Calcutta, 1901.

THE author of this little book strikes out a new and original line. Instead of being a formal treatise on midwifery the subject-matter is introduced in the form of dialogues and short stories, so as to be easily intelligible "even to illiterate females if read out to them by others." A few English terms have been transliterated, some of which have already found currency in the zemana, for "the slang of the country *dharis* is intelligible only to the initiated few." Care has been taken to limit the province of the

midwife, and clear warning is given against her interfering in cases where qualified medical aid should be called in. The dangers of uncleanness and septic poisoning are very clearly indicated. The successive chapters deal with menstruation and conception, with the signs of pregnancy, with the phenomena of labour, the care of the pregnant woman, the management of natural labour, and the care of the lying-in woman and the infant. Domestic remedies, the use of Mellin's food and such like, irregular presentations, hæmorrhage, eclampsia, &c, are all dealt with as fully as need be for this class of midwives.

We have nothing but praise for the book any thing which tends to improve the knowledge or rather lessen the ignorance of the native midwife is excellent, and we congratulate the author on the original and simple way he has tried to do this.

MEDICAL SOCIETY

MADRAS BRANCH, B M A

THE following interesting and valuable discussion is published *in extenso*—

DISCUSSION ON THE TREATMENT OF HEPATIC ABSCESS

Lieutenant Colonel J. Maitland I.M.S.—The subject that we have met to discuss this evening is not only one of perennial interest to us in Madras where the disease is so common, but is also one of special interest at the present time, owing to the fact that somewhat radical changes in the treatment of this affection have lately been forced upon the attention of the profession. The first point to which I should like to draw attention concerns the use of the exploratory needle. There is a tendency amongst medical men of the present age to resort somewhat hastily to the use of such means as that of the exploratory needle to the neglect of careful and systematic investigation by the more ordinary and often less hazardous methods of clinical examination,—a tendency in other words to make short cuts to diagnosis. I am afraid that this is sometimes the case in regard to abscess of the liver. In the great majority of cases the diagnosis of hepatic abscess is quite simple, and the use of the exploratory needle quite unnecessary. It is extremely important to emphasise this point because there appears to be a widespread idea that the use of the exploratory needle, in cases of disease of the liver, is a very simple procedure and one unattended with any danger. So far is this from being the case, that a very considerable number of deaths have been recorded, as having been due directly to this operation. For this reason alone it is important to insist that exploratory punctures for the purpose of diagnosis in cases of disease of the liver should be restricted to those cases in which it is absolutely necessary. There are a certain number of cases in which its use cannot be avoided, but they form a comparatively small proportion. What are the causes of the hæmorrhage which occurs in some of these cases? Mr Cantho in a paper read at the recent meeting of the British Medical Association stated his belief that the chief danger of hæmorrhage was from the inferior vena cava and that this vessel could not be injured so long as the needle was not thrust in as far as four inches. Whether any of the recorded cases of hæmorrhage were due to injury of the vena cava, or not, I am not prepared to say, but I do know from practical experience that fatal hæmorrhage may occur from puncture of the liver tissue alone, when that tissue is in a condition of acute congestion. I speak feelingly on this subject because I lost a patient myself from this cause. The case was one in which I was asked to explore the liver of a patient who was suffering from acute hepatic congestion, and in which the presence of an abscess was suspected. Two hours later, when going round the wards, I found the patient dying from internal hæmorrhage. The vena cava was not injured in this case, bleeding took place from the liver substance itself. Fatal hæmorrhage has also been known to occur from injury to the intercostal artery. Whenever it becomes necessary to perform an exploratory operation, arrangements should be made to open the abscess

at once, should pus be discovered. By opening the abscess at once, not only is the patient saved the injurious consequences that may result from delay, but he is also saved the anxiety involved in a second operation. Moreover it sometimes happens that considerable difficulty is experienced in hitting off the abscess at the second operation, although it may have been found quite easily on the first occasion. Indeed I have known of a case, in the practice of a colleague, in which the abscess could not be found at all at the second operation. In performing the exploratory operation by means of a needle there is one precaution to which it is important to pay attention. There is always a temptation, in withdrawing the needle, when no pus has been found, to alter its direction before it has been completely withdrawn, and make another exploratory venture through the same orifice. As this manoeuvre tends to enlarge the orifice of entrance, it should always be avoided. If it is necessary to explore again, a fresh puncture should be made at another point. The fatality to which I have already alluded was due I believe, in part to neglect of this precaution. The possibility of wounding the intercostal artery, if due precaution is not taken, must also be borne in mind.

I will now pass to the consideration of the operation for the evacuation of the abscess. If no exploratory puncture has previously been made, a needle must first be inserted for the purpose of locating the pus. In the great majority of cases of single abscess the pus is found in the right lobe, and a trans thoracic opening is required for its evacuation. The cases in which the abscess is situated in the lower part of the right lobe, which has been pushed far down below the margin of the ribs are, in my experience, comparatively uncommon. I propose therefore to first describe the trans thoracic operation, as I am in the habit of performing it. If any point of special tenderness has been found, the needle may be thrust in at that part. If no indication of that nature is present, it is best to explore through the eighth intercostal space. When the abscess has been found the needle should be left *in situ* to serve as a guide. An incision is then made over the rib immediately beneath the level of the needle, and a portion of the bone, about two inches in length, is removed. The pleura is next incised, and, if there are no adhesions, the two layers are stitched together, the sutures being made to enclose as wide an area as possible. The diaphragm and peritoneum are next divided, and if no adhesions are present, the peritoneum is dealt with in the same manner as the pleura. A pair of *sinus forceps* is passed alongside of the aspirator needle into the abscess and an opening made by separating the blades. The opening is then enlarged to the necessary extent by incision. Having made a sufficiently large opening, two glass drainage tubes are inserted and the pus allowed to flow away. When pus has ceased to flow freely the cavity is irrigated with weak boric acid lotion or sterilised water, in order to wash away as much as possible of the remaining purulent contents. Irrigation of the abscess cavity, although not an absolute essential, has the advantage of minimising the amount of discharge subsequent to operation. After the abscess has been emptied as far as possible a finger is introduced into the cavity for the purpose of ascertaining its size, and necessity or otherwise, of making a counter-opening. If the abscess is a large one, and the opening has not been made at the most dependent point, a counter-opening should be made further down and more posteriorly. The arrangements for securing free drainage are the most important points in the whole operation and it is for this reason chiefly, as I shall show later on, that I am opposed to the methods recommended by Mr. Cantlie, in the paper alluded to above. The main opening into the abscess should be sufficiently large to admit two drainage tubes of half an inch diameter easily. An opening of this size cannot be made in the chest wall without removing a piece of rib. I am in the habit usually of injecting iodoform emulsion into the cavity of the abscess, before inserting the drainage tubes. This is done with the view of checking septic decomposition should the discharges come to the surface and become contaminated as they are not unlikely to do if the abscess has been a large one. There is considerable difficulty in applying a sufficiently wide and thick dressing to this part of the body. In a climate like that of this country, nothing is more distressing to a patient than to be swathed in an enormous mass of dressings.

When the abscess has to be opened below the ribs the operation is necessarily more simple. Here again I consider it best to operate by means of a free incision, and, if adhesions have not taken place, to stitch together the two peritoneal surfaces. If, as sometimes happens, difficulty is experienced in suturing the peritoneum, owing to the proximity of the pus, to the surface, or to the movements of the liver, the better plan is to pack the wound with gauze, and, having turned the patient on his side, to open the abscess by means of a knife. After the pus has been evacuated, the edges of the wound in the liver are stitched to the edges of the wound in the abdominal wall.

I should now like to say a few words regarding the method of operation recommended originally by Dr. Manson and specially advocated by Mr. Cantlie at the recent meeting of the British Medical Association. It is necessary that this question should be fully discussed, not only because this method is so enthusiastically recommended by Mr. Cantlie, but also because he condemns, in equally forcible language, all other methods of operation. Is it possible that our methods here in India are so faulty as he proclaims them to be? For my own part I do not think so. Mr. Cantlie's method, speaking briefly, consists in puncturing the abscess with a trochar and emptying it by means of "siphon drainage." It is in fact an operation by means of limited incision as opposed to operation by free incision, and is therefore opposed to the ordinary principles upon which abscesses in other parts of the body are treated. The main objection to this operation, as I have already stated, is that by such a method of dealing with an abscess of the liver we cannot ensure that drainage will be sufficiently free. This objection is forcibly illustrated by three out of the four cases cited by Mr. Cantlie in his paper. In the first case we are told that on the tenth day the drainage tube having slipped out, it was found necessary to administer an anæsthetic before the tube could be reinserted. Again, in the same time case, on the thirty-fifth day, it became necessary to make a counter opening in order to establish free drainage. In the second case we find that on the thirty-third day there was some difficulty in drainage, and it was contemplated to open the cavity further back, but the patient objected to be operated upon again. In the third case the drainage tube was pulled out by the patient on the night after the operation and "could not be satisfactorily replaced." Four days later a large drainage tube was introduced and twenty ounces of pus welled out of the wound. It is to be presumed that these four cases that have been selected by Mr. Cantlie, are taken by him to illustrate the benefits of his method of treating abscess of the liver, as compared with the results obtained by other methods. If that be so, I can only say that in my experience such extraordinary difficulties in securing free drainage, as were met with in these three cases, are the rarest exception. It is impossible to avoid the conclusion that all these difficulties would have been obviated had the abscesses been opened by free incisions. The truth of the matter is that an opening so small as to tightly embrace a single tube does not suffice for the efficient drainage of most large abscesses of the liver. Moreover, if the tube becomes displaced by accident, its replacement into so small an opening is almost an impossibility. These difficulties are occasionally met with even in cases where a piece of rib has been excised and an opening made sufficiently large to admit two drainage tubes with ease. Another disadvantage of Mr. Cantlie's method of operation is that it does not admit of exploration of the cavity of the abscess with the finger, and therefore no estimate can be formed of its size, nor of the necessity, or otherwise, of making a counter opening.

Before concluding I would like to draw attention briefly to the objections raised by Mr. Cantlie against the ordinary method of operation. In the first place, he states, that "the severity of the operation in many cases is such that the opening of the abscess is apt to be deferred until too late in the disease." That is a statement that is entirely without justification so far as India is concerned. The rule in this country is to operate at once. His second objection is that "the medical practitioner is willing to try every available resource before condemning his patient to so severe a line of treatment." It is hardly necessary for me to say, in this assembly, that such a statement is also without justification, at least so far as India is concerned. Indeed it would be curious to know what the "available resources" are, to which Mr. Cantlie alludes.

Lieutenant Colonel Sturmer, I.M.S.—I agree with what Colonel Maitland has said for the most part. My experience is no doubt limited and I have not had to excise the rib so frequently, but then perhaps my cases have been further advanced and have contracted adhesions to the abdominal wall below the ribs. I cannot consider Mr. Cantlie's operation superior to that of incision and free drainage. My results from prospecting the liver have never resulted in any after bad effects, but Colonel Maitland states he lost a case and Colonel Hatch in the *Indian Medical Gazette* reports one or two deaths. That the liver can bleed when punctured there can be no doubt, and that too without puncturing any such large vessel as the vena cava. I certainly think it advisable to irrigate the abscess cavity after incision and cannot understand why you should treat a case of hepatic abscess differently to that of an abscess elsewhere.

Captain Molseworth said he should like to ask Colonel Maitland whether it was not a fact that exploration in cases of congestion of the liver has not been followed by disappearance of the symptoms.

Lieutenant Colonel Browne agreed with *Colonel Maitland's* remarks. He did not quite understand what *Mr Cantlie* meant by "siphon drainage" and noticed that *Dr Manson* said nothing about it in his latest book. It was very unusual for the tube to run "full" and therefore "siphon action" could not be obtained. He believed that the danger of draining the pleura was just as great with the tube as with the incision method. He knew of three cases in which death occurred from haemorrhage. In one of these, certainly, the bleeding did not come from the vena cava or any of the large veins, but welled up from the whole of the interior of the wound.

Captain Niblock said that he agreed with everything *Colonel Maitland* had said. As to exploratory puncture with a needle he thought it should only be done in the operating theatre, when the operation could be proceeded with at once. Two cases he had seen impressed this strongly on his mind. The first case had been explored in the ward, and was a short time afterwards sent to the theatre. When the liver had been exposed by incision the pus was seen to be pouring into the peritoneal cavity through the puncture in the hepatic wall. In the second case also the patient had been punctured and then sent to the operating theatre with diagnosis of hepatic abscess. Under chloroform an exploring needle was introduced close to the former puncture wound, but immediately on entering the cavity of the peritoneum blood began to flow through the needle and several ounces came away. An incision was made alongside the needle at once when about ten ounces of dark blood were sponged out of the peritoneal cavity. The liver was found to be very congested and the capsule extremely tense. An irregular rupture about three quarters of an inch in length was found in the latter, which opened immediately into a cavity the size of a walnut. In this case the oozing was general and did not come from any large vein. The damage to the liver substance was probably due to alterations made in the direction of the needle before it had been completely withdrawn. His experience therefore agreed with that of the previous speakers that bleeding was not in every case, at any rate due to puncture of a large vein.

The operation performed by him was similar to that described by *Colonel J. Maitland* except that he did not inject iodoform emulsion. Later, if any unpleasant smell was noticed in the discharge, he injected iodoform emulsion. He believed firmly in the use of two large tubes, one of which could be removed after a few days time in the majority of cases. In one of his earliest cases in which the liver only projected a few inches below the costal margin he incised below the ribs, with the result that as the abscess began to empty and contract, the liver was drawn up under the ribs and the utmost difficulty was experienced in getting and keeping the drainage tubes in. Liver since, unless there was very great enlargement below the costal margin, he used the transthoracic method, generally with excision of a rib.

He had operated by the incision method in twelve cases of single abscess, with two deaths and in four cases of multiple abscess, all of whom died. In no case was death due to the operation itself, and he did not think that any of the fatal cases would have been saved by the "siphon drainage" method.

Lieutenant Colonel J. Maitland in reply—*Captain Molesworth* has drawn attention to the fact that it is stated in some books that puncture of the liver with an exploring needle even if no pus is found, is calculated to have a beneficial effect. It is unfortunately true that such has been the teaching on this subject, but it is to be hoped that in view of the fatalities that have resulted from the operation the use of the needle will in future be more restricted than in the past. He was pleased to learn that evidently all the members present were in favour of the open method. As to mortality after operation, the great majority of our deaths were in cases of multiple abscesses of the liver.

Correspondence.

MOSQUITOS AND MALARIA. A REPLY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I have read *Mr Louis Stromeyer's* letter on some objections to the mosquito malarial theory in your January number, and I take this opportunity of replying to some of his arguments.

It has not yet been proved that all species of anopheles carry malaria. It is not surprising, therefore that anopheles mosquitos, especially those which do not naturally carry malaria, for example, the most common anopheles of India, *A. Rossii*, may be at a maximum when fever is at a minimum. Even a well recognised fever carrying species of anopheles cannot communicate malaria to man unless the mosquito

becomes infected from man. Moreover even although a suitable species of anopheles and malaria infected man be present together, other factors are necessary for the development of the disease in the mosquito, in particular a suitable temperature.

Strong arguments based on analogy have lead those at all acquainted with the laws of parasitology to conclude that there is probably no other source of malarial infection in man than the infected anopheles mosquito. Such arguments would not naturally appeal to a layman like *Mr Stromeyer*.

"Kill the mosquitos," says *Mr Stromeyer*, "but do not cleanse and ventilate those houses which were not cleansed or ventilated." He probably does not know that anopheles loves the dark, ill ventilated corners of human habitation to dwell in and seeks out such places to live in during the day. Do away with such places, and you will get rid of anopheles and so of fever in the house.

"Has it not occurred to the advocates of this theory to examine the anatomy of the proboscis of the insect?" Indeed it would appear that *Mr Stromeyer* had not done so before he wrote this letter, or he would not have framed wild theory on the capillary powers of the proboscis. It will I think suffice if I state that the mosquito is furnished with a beautiful organ—"the pumping organ"—for sucking and also with suitable muscles for the ejection of saliva from its glands into its victim.

Yours, &c,

W. GLEN LISTON,

Captain, I.M.S.

ADEN,

15th January 1902

INVOLUNTARY IRIDECTOMY

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—As *Captain Duer* suggests in the *Indian Medical Gazette*, October 1901, it would interest us much to hear more from our experienced operators of the cause of this incident of involuntary iridectomy. I have often wondered why more has not been said about it. When it has happened to me I have always put it down to want of skill. Perhaps it has been so. I do not believe that it is always due to incomplete anaesthesia as it has happened, to my knowledge, when the patient has been completely anaesthetised with chloroform. I have also seen it occur when operating on the dead subject.

One cause for the accident is no doubt, as "minor operation" suggests, too rapid escape of aqueous humour due to rotation of the knife in making the corneal incision.

Incomplete anaesthesia may be another cause. As to its prevention, *Swanzy* advocates the use of eserine and states in his book that he makes a practice of using it. This prevents prolapse of the iris, he says, during the operation. My small experience confirms what he says. There is a further advantage in using eserine. It enables one to obtain a small neat coloboma when an iridectomy is performed.

Yours, &c,

W. G. PRIDMORE, M.B., B.S.,

Captain, I.M.S.

BHAWO

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—That this complication of cataract extraction is of fairly frequent occurrence and the cause of embarrassment to the operator is shown by the correspondence that has recently taken place in your columns. Most text-books do not mention it, or if they do, merely direct the operator to complete the section without attempting any explanation of how the iris gets in front of the knife. The following paragraph, taken from *Julius's 'Ophthalmic Science and Practice'* under the heading 'accidents and immediate complications' (of cataract extraction), gives to my mind the most rational explanation—"Early escape of aqueous.—Having completed the puncture and counter puncture, the section must not be made too slowly, or the aqueous escapes, and the iris bulges forward in contact with the edge of the knife before the section is finished." In amplification of this I would insist that no part of the section should be attempted until both puncture and counter puncture are completed, but that the moment the point of the knife emerges through the latter, the knife should be made to cut evenly at each portion of the section in the direction it is wished to go (corneal or scleral or whatever section is used). If either end or other edge is tilted at all, &c, not kept parallel to its original direction, aqueous escapes, and the iris gets in front of the knife. I have seen this happen many times when the aqueous escaped too soon, but never otherwise, and whatever the degree of anaesthesia. With a new knife the section may be completed in the first stroke from point to heel of the knife, but often it is not, and then it

is very important not to delay but to at once begin withdrawing the knife still cutting all the while, otherwise early escape of aqueous is likely to occur. Eserin would not, I fancy, prevent it, and I never use it now for fear of the vomiting it sometimes causes, as well as the miosis, it is said, justly I believe, to not infrequently set up. To prevent prolapso atropin is more useful than eserin in my opinion for reasons already given in a paper contributed to your special ophthalmic number. Captain Pridmore having seen involuntary iridectomy occur in the dead subject, it is difficult to explain whatever view of its origin we adopt.

PATNA,
Feb'y 4th, 1902

I have, &c,
F P MAYNARD, F.R.O.S.,
Major, I.M.S.

CASE OF OPIUM POISONING

To the Editor of "THE INDIAN MEDICAL GAZETTE"
SIR,—I send you the following notes of a case for publication—

Ram Shoshi Mandal, Hindu, aged about 18 years, was brought to the Police Case Hospital, Alipore, at 12.30 P.M., 12th September 1901, with the following history—He had been in the habit for months past of taking a morning and evening dose of bazaar opium, about ten grains each time, to relieve him from pain. On the morning of admission he mixed 1½ tolas or about 288 grains with his rice and dhall meal—this he consumed.

In about two hours he became unconscious and was brought to hospital by his relatives where he arrived at 12.30 P.M. On admission he was unconscious, breathing stertorous, conjunctiva deeply injected, pupils minutely contracted, and his pulse small and rapid. He was immediately taken in hand, the stomach was well cleared out and washed well with tepid water first, then with a weak solution of Pot. Permanganate of Potash, finally a solution of Pot. Permanganate gr. iij to 5ij was pumped in and allowed to remain. In the mean while Sol. Atropine (5%) mv was subcutaneously injected. The patient was kept on the move by attendants and was frequently doused with cold water, the galvanic battery was applied at intervals to the chest and neck, and hot coffee and milk administered. The catheter was passed about 6 P.M., and about twenty ounces of turbid high coloured urine with drawn.

The following morning he was very drowsy but able to recognise those around him and to talk, but in a confused way, finally a dose of castor oil was given him and he made an uninterrupted recovery. He was discharged on the fourth day cured.

I am indebted to Civil Hospital Assistant Lal Mohun Bose, who kindly took notes of the above case for me.

ALIPORE
November 1901

Yours, &c,
FRANCIS J. DALY,
Military Assistant Surgeon

SUPRAPUBIC LITHOTOMY

To the Editor of "THE INDIAN MEDICAL GAZETTE"
SIR,—In accordance with the wishes of the late Director General, Indian Medical Service, I trust you will publish the following statement of five cases of supra pubic lithotomy in children.

In all 42 cases of stone have been operated on here during the past year, and the large proportion of supra pubic operations was due to difficulties met with in attempting litholapaxy which I still believe to be the operation of election.

In two cases the urethra was too small to admit a lithotrite large enough to grasp the stone, in one the small stone was too hard to be crushed even by a No 8 lithotrite and in two cases the stone could not be grasped, not because it was too large but because it had a polished surface off which the No 8 lithotrite slipped though under ordinary circumstances it would have crushed the stone.

In one case the bladder was drained through the wound, but in the other four the walls were sutured together and the wound drained. In one of these four there was healing by first intention, in the other three cases leakage of urine occurred. All five cases made good recoveries and their average detention in hospital was 23 days.

In the last four cases the bladder was for the first few days drained with a Jaques catheter the outer end of which was pressed into a piece of rubber tubing fixed at one end to the dressings and at the other end dipping into a bottle beside the bed. Clinical cleanliness with some lateral movement were thus secured for the patient.

Yours faithfully,
C E SUNDER, M.B.,
Major, I.M.S.,

PILGRIM HOSPITAL, GYA

Statement showing the number of Lithotomy operations performed in the Pilgrim Hospital, Gya, during the year 1901

Serial No	Names	Age Years	No of days remained in Hospital	Disease	Operation	Nature of stone	Weight of stone	Cured	Remarks
1	Rupan Ahir	13	33 days	Vesical calculus	Lithotomy Supra pubic	Stone composed of urates	7 drs	Do	
2	Raghunath Bhatta	3½	24 "	Do	Do	Stone composed of phosphates	125 grs	Do	
3	Bhattoo Dusadh	6	20 "	Do	Do	Do	9 drs	Do	
4	Fekwa Hajam	6	21 "	Do	Do	Do	40 grs	Do	
5	Harkissen Teli	9	18 "	Do	Do	Do	102	Do	

C E SUNDER, M.B.,
MAJOR, I.M.S.
Civil Surgeon

Service Notes.

THE SERVICES IN 1901

THE chief events of the year to the R.A.M.C. have been the continuance of the war in South Africa, and the scheme for the reorganisation of the corps drawn up by Mr. Bidrick's Committee. The war still, 'like a wounded snake, drags its slow length along,' and is now well into its third year. There is nothing surprising in this, it was fully five years after the annexation before Upper Burma was pacified, and subsided quietly into peace and prosperity. But the operations in Burma were conducted mainly by Indian troops, latterly by Military police, and attracted much less attention than the war in South Africa. Even in the case of Burma the friends of every country but their own did their best to vilify the troops engaged, as well as the general policy of the country, but fortunately with much less vigour and much less effect than in Africa.

The tale of death, especially of death from disease, in South Africa has been much less in 1901 than in the preceding year. Still no less than six medical officers have been killed in action or died of wounds, during the year, while six officers died of disease in South Africa during 1901, and a seventh, a few days after the close of the year. The lamented death of Sir William MacCormac was also, in all

probability, due to disease contracted at the front. It is curious that out of the six medical officers killed, only one belonged to the regular forces. It may be of interest here to give a list of all the medical officers killed during the war, from its just beginning up to date. They are as follows in chronological order—

- 1 Major E Gray, R A M C, Farquhar's Farm, Ladysmith, 30th October 1899
- 2 Civil Surgeon A C Stark, Ladysmith, 18th November 1899
- 3 Captain M L Hughes, R A M C, Colenso, 14th December 1899
- 4 Captain R H E Holt, R A M C (wounds), Tugela, 21st February 1900
- 5 Lieutenant H B Onraet, R A M C, Hlangwane, 27th February 1900
- 6 Lieutenant G H Irvine, R A M C, Koorn Spruit, 31st March 1900
- 7 Asst. Surgn J T O'Neill, Bo, S M D (wounds), Geluka, 25th August 1900
- 8 Major G Hilliard, R A M C (wounds), Doornkop, 7th September 1900
- 9 Civil Surgeon Engelbach, Nootgedacht, 13th December 1900
- 10 Civil Surgeon W L W Walker, Modderfontein, 31st January 1901
- 11 Surgeon Captain F Welford, 7th Battalion, I Y (wounds), Vlakfontein, 1st June 1901
- 12 Captain E C Smith, 62 Co, I Y (wounds), Harri smith, 4th October 1901
- 13 Civil Surgeon O M Robertson, Brugspruit, 25th October 1901
- 14 Lieutenant J S Twigg, R A M C, Clanwilliam, 23rd December 1901
- 15 Civil Surgeon J K Reid (wounds), Tweefontein, 24th December 1901

Two lengthy Gazettes of Honours have appeared during the year, and decorations have been distributed with a liberal hand. The R A M C have got a fair share thereof, and the medical services may be especially proud of the fact that no less than five Victoria Crosses have been won by medical officers, Major Babtie, Lieutenants Nickerson, Inkson and Douglas, and Captain House, of the New South Wales Medical Corps. The four officers of the R A M C who won the V C each also received either a decoration (in one case) or a step of promotion (in three cases).

Of the greatest importance to the future well being of the corps are the recommendations of Mr. Bodrick's Committee. These proposals have not yet been embodied in a Royal Warrant, and it is to be hoped that they may be reconsidered before they meet with the official imprimatur. The general opinion seems to be that the proposals are not satisfactory, and that they will fail in their object which is to attract men to enter the corps. The increase in pay to the junior ranks is certainly something to the good. But we shall be much surprised if men will be found to enter the corps in sufficient numbers. The constant examinations, and the long continued uncertainty as to position and prospects, will, we think, be found a complete deterrent.

The proposals of the Committee, moreover, do not appear to recognise the fact that the root of most of the grievances of the corps is undermanning. As long as there are not sufficient officers available for the regular routine work, so long will the complaints as to the difficulty of getting private or study leave, (rather the impossibility in the latter case), and as to constant transfers continue. The corps is even now dangerously short-handed, and as soon as the war is over, there will probably be a great exodus of senior men. At least three hundred men, over and above the present strength, will be required to bring about a state of efficiency.

In the Indian Medical Service the chief events have been the war in China, and the death of the Director General. Nearly half a century has elapsed since the one previous occasion when the head of the service died during his term of office (Sir James Thomson, K C B, died in Calcutta on 25th August 1853), and over a quarter of a century since an administrative medical officer died on duty (Deputy Surgeon General Donald Macdonald died at Shillong on 10th August 1874). Few officers have been more regretted than Surgeon General Harvey. *Mullis illa bonus flebilis occidit.*

The war in China cost the life of one Indian Medical officer, Lieutenant Colonel Dainle, of the Madras Service, as well as of Dr Steel, of the Australian Contingent. A few decorations, and one special promotion, the last certainly well earned, were bestowed. Out of five medical officers of the I M S who have served in South Africa, one died (in 1900), and two were rewarded with the O M G. One of the latter, however, Deputy Surgeon General Cayley, was serving in charge of the Scottish Hospital, and many years have elapsed since he retired from the service. Lieutenant Colonel O B Mutland, of the Bombay Service, was killed in action in Somaliland, and Captain Johnston, of the same service, was murdered by a fanatic at Loralai.

The leave grievance has to some extent abated during the past year. Many of the officers recalled from furlough in England to duty in India, in August 1900, on account of the China war, have been allowed to take the remainder of their furlough. Several of them, indeed, have had it all, and returned to duty. Many others, perhaps less fortunate, have not yet succeeded in getting it, in most cases probably not for want of asking. However, their furlough is still to come, and they at least enjoy the pleasures of hope.

It is not, we think, sufficiently recognised how deeply this grievance, the difficulty of getting leave, is felt by the whole service. Individuals may have their own grievances, with more or less justice, but this one affects the whole service. It is the one real grievance which the service has, in other respects the I M S is fairly well off, but it is a very large one. It depends, of course, upon undermanning. As in the case of the R A M C, there are not sufficient men to do the work. It has been stated that the late Director General sent in proposals to increase the strength of the service by fifty men, not one too many for the work to be done, and that half his proposals has been approved, and an increase of twenty six officers sanctioned. This is something, for this relief much thanks.

THE SERVICES IN 1901

I—BENGAL.

A—Deaths

Rank	Name	Date	REMARKS
Dir. Genl	R Harvey	1st Dec	Simla, enteritis
Lt. Col	J Moran	21st Sept	London
"	J Clarke	11th Feb	Lahore, phthisis
Major	H C Hudson	8th Feb	London, aneurism

B—Retirements

Rank	Name	Date	REMARKS
Lt. Col	F Lawrie	17th May	
"	E Palmer	31st Mar	Extra pension
"	E Borill	9th Nov	Extra pension.
"	A J Willcocks	1st Apr	
"	J M Zornb	9th Oct	
"	W A Stammonds	6th Aug	
"	P de H Hing	15th Feb	
"	G M J Giles	15th Jan	
"	F Mullane	1st Nov	
"	F D C Hawkins	26th Oct	
Major	G H Fink	13th July	
"	W G Thorold	15th Apr	On T H P
Captain	H B Luard	15th Mar	On T H P
"	G I C Hunter	19th Apr	On T H P
"	A. F. H Pinch	17th Dec.	On T H P since 10th Nov 1899

C—Promotions

Old Rank	Name	New Rank	Date	REMARKS
Colonel	B Franklin	Surgn. Genl & Dir. Genl.	1st Jan 1902	V Harvey, D
Major	C C Mansfield	Lieut. Col	29th Nov 1900	Special for China.

D—Honours

Rank	Name	Honour	Date	REMARKS
Surgn. Genl	Sir J Faylor	Physn to King	Mar	
Colonel	G McB Davis	G S Pon	14th July, 1900	
"	J T B Bookoy	C B	20th Nov 1900	China.
D S G	H Cayley	C M G	27th Sep	S Africa
Lieut. Col	G H D Gimlette	C I E	9th Nov	
"	L A Waddell	C I E	24th July	China
"	J F MacLaren	I D	21st June	
Major	A W Alcock	I R S		
"	W R Edwards	C M G	20th Nov 1900	S Africa
"	W H B Robln	K I H (2CL)	1st Jan	
Captain	E Wilkinson	K I H (1CL)	9th Nov	
"	J N Macleod	K I H (2CL)	9th Nov	
Lieut	H A Williams	D S O	24th Nov 1900	(I M S) China.

E—Deaths of Retired Officers

Rank.	Name	Date	REMARKS.
I G	J A Dunbar	6th June	Clapham.
D S G	C Palmer	22nd Sep	London
"	C R Francis	10th Aug	London
"	A. Flouing	25th Mar	Edinburgh.
"	S C Townsend	9th Feb	Exeter.
B S	C E Raddock	5th Jan	Norwood
Surgn. Maj	R H Oakley	11th Dec 1900	
Surgeon	C Douglas	20th Mar	Kelso
Surgn. Maj	C F Warnford	10th July 1901	England

[* Some sixteen names of medical men who have done approved work on Plague were submitted by local Governments for enrolment in cadre of I M S. Four of these, we believe, accepted the offer the other twelve had not replied at time of writing this. It is at any rate expected that some ten or twelve will be taken on in this way. They will understand, go to Netley with the batch which passed the February examination in London and be graded below them on the list. Indian Medical Service officers will welcome the new recruits who have worked most harmoniously among us for some years past, but most men would have preferred that the extra men (urgently required for the service) had been recruited in the ordinary way.—Ed, I M G

II -- MADRAS

A -- Deaths

Rank	Name	Date	REMARKS
Lieut. Col	G L Walker	31st May	Malaria, septicaemia
"	E M Damla	20th May	Shanghai

B -- Retirements

Rank	Name	Date	REMARKS
Colonel	T J McGann	4th May	
Lieut. Col	A H Leapingwell	31st March	
"	F J Doyle	7th April	
"	C Adams	8th July	
"	M P Kharagat	8th August	
"	A T L Patch	23rd Nov	
"	J K. hanga	14th Dec	

C -- Promotions

Old Rank	Name	New Rank	Date	REMARKS
Lieut. Col	A A Dobson	Colonel	4th May	V McGann, R.

D -- Honours

Rank	Name	Honour	Date	REMARKS
Surgn. Genl	C E McVittie	GS Pen sion	Jan 1901	
Major	R Ross	F.R.S.	" 1901	(Retired)

E Deaths of Retired Officers

Rank	Name	Date	REMARKS
B S Lieut. Col	J B Thomas	1st Sept	Sandown

III -- BOMBAY

A -- Deaths

Rank	Name	Date	REMARKS
Lieut. Col	C B Maitland	15th Feb	Killed in action, Somaliland
"	D O Davidson	2nd May	London
Captain	B F H Leumann	7th Jan	London
"	D C Johnston	9th Jan	Murdered, London

B -- Retirements

Rank	Name	Date	REMARKS
Colonel	S O B Banks	13th Nov 1900	
Lieut. Col	G Waters	23rd April	
"	M L Bartholomew	31st March	
"	H MacCallum	12th April	
"	J Parker	18th May	
"	S J Aretoom	1st Oct	

C -- Promotions -- Nil

D -- Honours

Rank	Name	Honour	Date	REMARKS
D S G	H J Blane	K C V O	16th July	(Retired)
Lieut. Col	M L Bartholomew	K I H (2CI)	1st Jan	
"	J McCloghry	K I H (1 CI)	9th Nov	
"	J S Wilkins	K I H (1 CI)	1st Jan	
Major	J Crimmins, V C	C I E	1st Jan	
"	T E Dyson	K I H (1 CI)	9th Nov	

E -- Deaths of Retired Officers

Rank	Name	Date	REMARKS
D S G	T Murray	15th Feb	Norwood
B S Lieut. Col	A N Hojel	1st Sep.	Birchington
S. Lieut. Col	S B Halliday	10th Jan	Auerley
Surgn. Major	D R. Ross	26th Nov	Brighton.

IV -- R. A. M. C.

A -- Deaths

Rank	Name	Date	REMARKS
Surgn. Genl	W A Catherwood	24th Sept	Natal cerebral haemorrhage
Major	E H. H. Smith	22nd Feb	Cairo cerebral haemorrhage
"	J R Burrows	15th Apr	Delant, fever
"	J Keately	6th Sept.	Bombay, pneumonia poisoning
Captain	F J Gaine	9th Oct	Harr gate
Lieutenant	J B Hall	29th Sept	(Lawwilliam killed in action)
"	J S Twigg	23rd Dec	
Captain	E C Smith	4th Oct.	62 Co. I. Y. Harri smith, wounds
Surgn. Capt	F B Pullin	27th Apr	Johannesburg Mounted rifles, Wimburg entrench.
"	F Welford	1st June	7th Batt, I. Y. Walfonteln wounds

Rank	Name	Date	REMARKS
Civil Surgn	J W Aldred	1st Jan	Kroonstad, on torio
"	W L W Walker	31st Jan	Modd fronton killed in action
"	J J Steel	Jan	Taku, Australian Contingent.
"	J T Alexander	5th Apr	On voyage S S America
"	D Graham	23rd June	Rietfontein, on torio.
"	A Stephen	6th Sept.	Kroonstad, pneumonia
"	F D Dunne	11th Sept	Pneumonia
"	H B Smith	1st Oct.	Mechadodorp, dysentery
"	C M Robertson	25th Oct.	Brugspruit, killed in action
"	J K Reid	26th Dec	Tweefontein wounds

B -- Retirements

Rank	Name	Date	REMARKS
Dir. Genl	J Jameson	1st June	
Colonel	C F Churchill	10th Apr	
"	R H Carrow	16th Aug	
Lieut. Col	J W G Croft	18th Feb	Died in London, 6th March
"	R T Beamish	20th Apr	
"	A B Cottell	24th Apr	
"	J D Day	14th June	
"	W W Pope	22nd June	
"	J O G Sandford	14th Aug	
"	H H Stokes	11th Sep	
"	G H Young	80th Oct.	
"	H J McLaughlin	6th Nov	
"	F A Harri	24th Oct	On T H P
Surgn. Lt. Col	H R O Cross	11th May	1st Life Guards
Major	J Harman	16th Feb	
"	L P Mumby	15th Mar	On T H P
"	P M Carleton	18th July	
"	J McM Bolstor	21st Dec	
Captain	J T Clapham	21st Oct	On T H P
"	J E Carter	1st Dec	On T H P
Lieut.	J Barkley	17th July	
"	R L Davies	12th Oct	

C -- Promotions

Old Rank	Name	New Rank	Date	REMARKS
Surgn. Genl	A F Preston	Dir. Genl	1st June	Jameson, R Temporary to 1st Dec.
Lieut. Col	W Taylor, C B	Colonel	2nd Dec.	Jameson, R
"	M D Connell		10th Apr	Churchill R.
"	W B Allin	"		
"	W L Gubbins	"		
"	A Keogh	Lieut. Col		
Major	W Babbie, V O	Lt. Col.		
"	D Bruce	"		
"	L E Anderson	"		
"	H G Hathaway	"		
Captain	T B Beach	Major		
"	C W R Henley	"		
Lieutenant	W H S. Nicker	"		
"	son V O	Captain		
"	E T Lukson,	"		
"	V O.	"		

D -- Honours

Rank	Name	Honour	Date	REMARKS
Surgn. Genl	W Taylor C B	K H P	21st Aug.	
"	A F Preston	K H P	6th Oct.	V Thomson, D
"	A F Preston	G S Pen sion	June 1901	
S. M. Genl	W D Wilson	K C M G	29th Nov	1900 South Africa.
"	A M Tippetts	G S Pen sion		
Colonel	W F Stevenson	C B	29th Nov	1900 South Africa.
"	J F Supple	C B		
"	T J Galloway	K C M G		
"	E. Townsend	C M G		
"	J A Clery	C B	27th Sept.	1901
"	W H Macnamara	C M G		
"	R. Exham	C M G		
Lieut. Col	Sir J G Rogers	Oswanleh (2nd CI)		1901 (Retired)
"	Sir J G Rogers	Medjidie (1st CI)		1901 (Retired)
"	W J Rinford	C I E		China.
"	W Donovan	C B	29th Nov	1900 S Africa
"	O G Wood	C B		(died 4th Jan 1901)
"	A Keogh	C B		S Africa.
"	A T Sloggett	C M G		Ditto
"	J W Williamson	C M G		Ditto
"	P H Johnson	C M G		Ditto
"	W G A. Bedford	C M G		Ditto
"	R W Ford	D S. O		Ditto
"	T J O'Donnell	D S. O		Ditto
"	A P O'Connor	C B	27th Sept	1901 Ditto
"	T R Lucas	C B		Ditto

20th November 1900

Special for South Africa (London Gazette 10th April 1901)

Rank.	Name	Honour	Date	REMARKS
Lieut. Col	F A B Daly	C B	27th Sept 1901	S. Africa
"	J C Dorman	C M G	"	Ditto
"	H J Peard	C M G	"	Ditto
S. Lt. Col	J Macgill	C B	"	Ditto
Major	H F Heinsman	C M G	20th Nov 1900	Ditto
"	G W Brazier	C M G	"	Ditto
"	Creagh	C M G	"	Ditto
"	F S Houston	C M G	"	Ditto
"	H A Cummins	C M G	"	Ditto
"	R J L Fayle	D S O	"	Ditto
"	W W Pike	D S O	"	Ditto
"	S F Loughheed	C M G	27th Sept 1901	Ditto
"	A F Russell	C M G	"	Ditto
"	S Westcott	C M G	"	Ditto
"	R Kirkpatrick	C M G	"	Ditto
"	R J S Simpson	C M G	"	Ditto
"	T W O'H	"	"	Ditto
"	Hamilton	C M G	"	Ditto
"	S F Froyer	C M G	"	Ditto
"	N O Ferguson	C M G	"	Ditto
"	H C Thurston	C M G	"	Ditto
"	C R A Julian	C M G	"	Ditto
"	R J Geddes	D S O	"	Ditto
"	A A Sutton	D S O	"	Ditto
"	O Garner	Medjidie (8th Cl)	2nd Apr	Ditto
"	J C Watson	C I L.	24th July	China
"	H E Deane	K I H (1st Cl)	9th Nov	Plague
Surgn-Major	W C Beaver	C M G	27th Sept	S. Africa
"	C R Killick	C M G	29th Nov 1900	Ditto
Captain	F C Anderson	D S O	"	Ditto
"	J H Campbell	D S O	"	Ditto
"	P I Probyn	D S O	"	Ditto
"	A W Hooper	D S O	"	Ditto
"	F Smith	D S O	27th Sept	Ditto
"	H J Parry	D S O	"	Ditto
"	J J W Porter	D S O	"	Ditto
"	H J M Buist	D S O	"	Ditto
"	E M Nichol	D S O	"	Ditto
"	C J O Gorman	D S O	"	Ditto
"	R S H Fuhr	D S O	"	Ditto
Lieutenant	F T Inkson	V C	16th Jan	Ditto
"	W H S Nicker	"	"	Ditto
"	"	"	"	Ditto
"	H E M Douglas, V O	"	"	Ditto
"	"	"	"	Ditto
"	H F M Douglas	D S O	29th Nov 1900	S. Africa
"	G G Delap	D S O	27th Sept	Ditto
"	H Fraser	D S O	"	Ditto
"	L N Lloyd	D S O	"	Ditto
"	J J W Prescott	D S O	29th Nov 1900	Ditto
Surgeon	W R Henderson	C M G	9th Nov	Retired P M O, Gold Coast

E—War Honours, Auxiliary Forces

Rank	Name	Corps	Honour	Date
Colonel	M D C Willi	N S W Medl Corps	C B	29th Nov 1900
S. Lt. Col	G B Hartley	Capo M S C	C M G	"
Major	J Hyslop	P M O, Natal	D S O	"
"	T H Fiaschi	N S W Medl Corps	D S O	"
"	W L F Fames	Do	C B	27th Sept
"	C Stonham	Ycomanny Hospital	C M G	"
Surgn Major	F A Holmden	B S A Police	D S O	29th Nov 1900
"	W F I Davies	I I H	D S O	"
"	J A J Smith	Kimberley Regt	D S O	"
Captain	J I Bramble	Capo Bearer	D S O	"
"	G E Hoborden	Kimberley	L H D S O	"
"	R E Roth	N S W Bearer	D S O	"
"	J A Greene	Do	D S O	"
"	A E Lorkins	Do	D S O	"
"	A H Horsfall	N S W Medl Corps	D S O	27th Sept
"	P Davidson	5th Batt	I I D S O	"
"	F Hopkinson	15th Batt	I I D S O	"
"	W I Kalsmith	6th Batt.	I I D S O	"
"	N R. House	N S W Medl Corps	V C	4th June (for Vredfort 24th July 1900)
Surgn Capt.	C B Keenan	Lord Strathcona's Corps	D S O	29th Nov 1900
"	R C Parkins	Brabant's Horse	D S O	"

F—War Honours, Civil Surgeons

Name	Honour	Date	REMARKS
Sir W MacComrae	K O B	29th Nov 1900	Consulting Surgeon
F Troves	K O V O	"	Ditto
Sir T FitzGerald	C B	"	Ditto

Name	Honour	Date	REMARKS
Sir W Thomson	C B	29th Nov 1900	Chief Surgeon, Irish Hospital
A D Fripp	C B	"	Chief Surgeon, I Y Hosptal
G H Makins	C B	"	Consulting Surgeon
F Troves	C B	"	Ditto ditto
W W Cheyne	C B	"	Ditto ditto
G L Cheitlo	C B	"	Ditto ditto
K Franks	C B	"	Ditto ditto
J Chisone	C B	"	Ditto ditto
A D Fripp	C V O	"	Chief Surgeon I Y Hosptal
A A Scot Skirving	C M G	"	I Y Hospital
J P Bush	C M G	"	Princess Christian Hosptal
D Wallace	C M G	"	Scottish Hospital
H E Cross	C M G	"	Scottish Red Cross Hosptal
A A Bowlby	C M G	"	Portland Hospital
H H Tooth	C M G	"	Ditto ditto
J W Washbourn	C M G	"	I Y Hospital
G Stoker	C M G	27th Sept	Irish Hospital.
J B Coleman	C M G	"	Ditto
H J Schallieb	C M G	"	Langman Hospital
R H Mills Roberts	C M G	"	Welsh Hospital
F D Boyd	C M G	"	Edinburgh Hospital
J F G Calverley	C M G	"	Portland Hospital
T H Oponshaw	C M G	"	Civil Surgeon
S F Denyer	C M G	"	Ditto
A Ricketta	C M G	"	Ditto
J L Thom	C B	"	Welsh Hospital

G—Deaths of Retired Officers

Rank	Name	Date	REMARKS
I G	R M Dano	29th Mar	Camberley
S G	W A Thomson	6th Oct.	Camberley
"	W N Manley, r c.	16th Nov	Cheltenham
"	A A Gore	10th Mar	Whitchurch, Salop
"	R L Dominichetti	12th July	Woodhall Spa.
"	W K. Swettenham	21st May	London
D S G	W J Fyfe	17th May	Clifton
Brig Surgn	J O Johnston	20th Mar	"
"	W B Wallis	6th May	Colchester
"	D Murray	20th Mar	Portrush
"	F Robinson	1st July	Eastbourne [Scots Guards]
"	T Y Baker	21st Aug	London.
Lieut. Col	J W G Crofts	6th Mar	London
Surgn Major	D P Parry	Mar	Tunbridge Wells
"	L Barron	6th July	London
Asst Surgn	W S Saunders	10th Jan	London
"	R A Hyde	31st May	Hove
"	R L Heard	31st Aug	Blackrock, Dublin
"	D R Pearson	5th Dec	Rye

(For the above notes we are, as usual, indebted to Lieutenant Colonel D G Crawford, I M S., of Hughll.)

The following letter from the Government of India dated Simla (No 39371, a) has been sent us by a correspondent — I am directed to address you on the subject of the rules regarding the remuneration of Medical Officers for attendance upon Native Chiefs and Nobles and Native gentlemen of position in Native States

2 The existing rules are contained in the Notification of the Government of India in the Home Department No 437, dated 25th July 1893, as amended by the subsequent Notifications which are cited in the margin. By these orders a Local Government is required to satisfy itself that the fee offered is a reasonable and proper one. It also has authority to sanction the acceptance of a reasonable fee up to a maximum of Rs 2,000, and where the fee proposed exceeds this sum, a reference is required to the Government of India

3 Although these rules would appear to be sufficiently simple and precise, several cases have recently been submitted to the Governor General in Council which indicate (i) that much uncertainty exists as to what is a reasonable and proper fee, and (ii) that Local Governments have in some instances failed to realise the importance of strictly scrutinising and controlling the proposals made, and have, therefore, passed on, and occasionally even recommended for sanction, fees which the Government of India have been compelled to regard as excessive and improper. Upon the first point it is obviously impossible to lay down any precise principles or definite regulations, but the existing rules prescribe that fees should not be out of proportion to the relief afforded or to the circumstances of the case. It may be added that they should also not be out of proportion to the rank, position, and emoluments of the Medical Officer concerned, and though it may often be right that they should be liberal, they should not exceed, to an extent which may be deemed extravagant, the general standard of the fees which the Medical Officer accepts in his ordinary private practice. With regard to the second point, the Governor General in Council desires to take this opportunity of reminding Local Governments of the duty, that is imposed upon them by the rules, of closely investigating the proposals made, not only when they forward their suggestions for the orders of superior authority. It should be understood that they are not expected to refer for

orders every case in which the fee offered or claimed exceed Rs 2,000, but only those cases in which they desire to recommend that the fee should exceed that amount. It is only by the strict and conscientious discharge of this duty by Local Governments that the Government of India can be relieved of the disagreeable necessity of intervening at a difficult stage, and under circumstances which are invidious to all concerned.

4 As examples of fees that are considered excessive, I am to say that a case has recently been submitted to the Government of India, in which a fee Rs 20,000 was under discussion, where a Civil Surgeon had operated on a Native Chief for cataract in one eye, and had remained in attendance upon him for a month. In another case, a Residency Surgeon asked permission to charge the Chief of the State in which he was employed a fee of Rs 1,500 monthly for attendance on his son for a period of 14 months, with a special fee of Rs 3,000 for a simple operation. In a third instance a Local Government recommended fees of Rs 1,800 and Rs 1,500 for a Residency Surgeon, who visited a neighbouring Chief on two occasions for six and five days, respectively, for purposes of consultation with the local Medical Officer. On another occasion the same Residency Surgeon charged a fee of Rs 6,000 for an attendance of 11 days. In a fifth case, a Residency Surgeon asked for a large increase to his allowances for personal attendance on the Chief of the State in which he was posted, although the rules distinctly contemplate that in cases of this kind the initiative should come from the Chief himself. In a sixth case, it was proposed to pay a fee of Rs 15,000 to three officers of the Indian Medical Service who had simultaneously treated a Native Noble for *delirium tremens* for a period of three weeks. It is the wish of the Government of India that, in cases of this kind, the control of the Local Governments should be exercised with a keener sense of their responsibilities under the rules, and that claims which are manifestly extravagant should not be submitted to them until they have been reduced to reasonable dimensions.

5 The Government of India desire it to be understood that, in making the preceding observations, and in commenting on certain cases in which the moderation inculcated by the rules has not been observed it is not their intention to bring any general charge against the officers of the medical profession, or to imply that the opportunities given to them of private practice in Native States are, as a general rule, abused. The standard of professional honour, that has always existed among the members of the service, would alone negative any such imputation, and cases are known to the Government of India in which the professional relations of Medical Officers with Native Chiefs have been characterised by a more than punctilious generosity. At the same time, it cannot be denied that the cases brought to notice in this letter, which are all of recent occurrence, indicate that there are instances in which a clearer understanding of the objects and wishes of the Government of India is desirable, and it is in the hope of preventing the recurrence of similar incidents that these general instructions are issued.

THE Madras Government has sanctioned a proposal of the Surgeon General to make a change in the designations of the Resident Surgeon and the Resident Physician, General Hospital, is necessary. As, however, the salary of the Resident Surgeon is Rs 800 per mensem, while that of the present Third Physician is Rs 700 per mensem, the Government consider that the former officer should rank before the latter in the classification. The following changes are accordingly ordered in the designations of the staff of the General Hospital—(1) The Resident Surgeon will in future be designated Third Physician. (2) The officer now designated Third Physician will in future be designated Fourth Physician. (3) The Additional Medical Officer (Resident Physician) will in future be designated Resident Medical Officer. No alteration in the duties or salaries of the officers will be caused by these changes. The Government is of opinion that so important an institution as the General Hospital should not at any time be left to the entire charge of the subordinate staff, and adheres to the decision that two Resident Medical Officers should be attached to it as soon as the necessary quarters are provided. Either the Third Surgeon or the Fourth Physician, both of whom draw Rs 700 a month, should be resident of the hospital in addition to the Resident Medical Officer. It will be left to the Surgeon General to decide from time to time, according to circumstances, which of these officers should be resident. Plans and estimates for the provision of quarters at the General Hospital for a second Resident Medical Officer were approved in March, 1897, and orders regarding their construction will now be issued in the Public Works Department.

It is understood that Major E Harold Brown M.D., I.M.S., goes home on furlough early in April pending probable retirement and Captain Robert Bird, M.D., F.R.C.S., I.M.S., will probably succeed him as Civil Surgeon of Alipore.

CAPTAIN W MOLESWORTH, I.M.S., succeeds Lieutenant-Colonel W B Browning, C.I.E., I.M.S., as Surgeon to the Governor of Madras.

WE are glad to see that Lieutenant E W D Greig, I.M.S., has been chosen to succeed Captain W Glen Liston, I.M.S., at the Bombay Research Laboratory.

LIEUTENANT M H THORNLEY, I.M.S., is granted a year's leave to England.

LIEUTENANT D C KEMP, I.M.S., is posted temporarily to 11th Madras Infantry and Lieutenant P L O'Neill, I.M.S., to the 24th Madras Infantry in addition to his other duties.

MAJOR J O PINTO, I.M.S., Civil Surgeon of Bilaspur, is granted 12 months' combined furlough.

CAPTAIN A FENTON, I.M.S., is appointed Civil Surgeon of the Minbu District, vice Assistant Surgeon T Kiddle.

LIEUTENANT D MCCAY, I.M.S., is granted one year's leave out of India (m.c.).

CAPTAIN M B PINCHARD, I.M.S. (Madras), joins the Burma Jail Department.

THE *London Gazette* of 10th December contains the following—To be Companion Distinguished Service Order—Lieutenant H A Williams, I.M.S. and under the heading "Brevet" Major C O Manifold, I.M.S., to be Lieutenant-Colonel. The Royal Red Cross is also conferred upon two nursing sisters.

LIEUTENANT H A WILLIAMS is probably the youngest I.M.S. officer ever decorated, he having only entered the service on 27th January 1900. We congratulate him.

LIEUTENANT COLONEL C O Manifold, I.M.S., was in China on an exploring tour when the troubles began. On his return to civilised parts he was put on special duty with General Gaselee.

Lieutenant-Colonel Manifold entered the service on 31st March, 1887, his promotion (antedated to 29th Nov) gives him no less than 78 steps and 6 years and 4 months extra seniority. He is M.B., C.M. Edinburgh and was educated at St Mary's Hospital and Edinburgh University. He has recently been in civil employ, N.W.P. and Oudh.

THE King has approved of the retirements of Lieutenant-Colonel J M Zorab, I.M.S., Lieutenant-Colonel Cecil Hawkins, I.M.S., Lieutenant-Colonel P Mullane, I.M.S., and Hon. Captain D T Baker, I.S.M.D.

THE retirement is gazetted of Lieutenant-Colonel C W Owen, C.M.G., C.I.E., I.M.S., from 15th March 1902. Lieutenant-Colonel Owen has been for some years past medical adviser of the Patiala State. He was made C.I.E. after the Afghan War, for having started a civil hospital for the people of Kandahar while the British troops were in garrison there. The C.M.G. followed for work done with the Afghan Boundary Commission under Sir Peter Lumsden and Major (now Sir Joseph) Ridgway in 1885-6.

MAJOR HAVELOCK CHARLES, I.M.S., was with Lieutenant-Colonel Owen, on the Boundary Commission.

LIEUTENANT COLONEL A N ROGERS HARRISON, I.M.S. (Madras), retires from the service with effect from 6th January 1902. He is an L.R.C.P. and M.R.C.S. of 1872, and entered the I.M.S. in October 1872. He has been District Medical Officer, Salem, up to date of retirement.

MAJOR J H TULL-WALSH, I.M.S., Civil Surgeon, Murshidabad, who went on 12 months' furlough on 1st May last, is granted an extension of leave for nine months. This will bring him back to India in end of January 1903.

CAPTAIN J J BOURKE, I.M.S., is placed on special duty in the Assay Department, Bombay Mint, with effect from 6th January 1902. Captain Bourke has been a probationer in the Assay Department since July last.

LIEUTENANT COLONEL DEANE, who has been appointed Chief Superintendent of the New Royal Victoria Hospital, Belfast, for the erection and endowment of which £200,000 was subscribed by the citizens, is a retired brigade surgeon of the Indian Medical Service, a Fellow of the Royal College of Surgeons, Ireland, M.D., Durham University, and was for some time employed as Inspector General of Civil Hospitals in the Punjab.

WITH the approval of the Right Honourable the Secretary of State for India the Government of India sanctions the staff pay admissible to a medical officer for the extra charge of a native mountain battery being increased from Rs 25 to Rs 50 a month, with effect from the 3rd November 1901

CAPTAIN C DUFR, I M S, took over the duties of Superintendent of the Rangoon Lunatic Asylum from Major C J H Bell, I M S

CAPTAIN W G PRIDMORE, I M S, took over the duties of Civil Surgeon, Bhamo, from Captain P K Chitale on 6th December

WE are glad to see that the services of Lieutenant Colonel S J Thomson C I E, I M S, the Sanitary Commissioner, N W P & O, have been placed at the disposal of the War Office, for the superintendence of the Boer concentration camps. Could only their services be spared, a few I M S sanitary officers would be invaluable to the authorities in South Africa

MAJOR J CHAYTOR WHITE, I M S, D P H, will officiate as Sanitary Commissioner during Lieutenant-Colonel Thompson's absence

CAPTAIN F S C THOMPSON, M B, I M S, Medical Officer, 20th Bombay Infantry, Calcutta, has joined the Aden Boundary Commission

ON return from leave Lieutenant-Colonel W A Lee, I M S, is appointed District Medical Officer, Trichinopoly

LIEUTENANT COLONEL W F THOMAS, I M S, is appointed District Medical Officer, Madura

ON the departure on furlough of Major A R S Anderson, M B, I M S, Captain E E Waters, I M S, now at Presidency General Hospital, Calcutta, succeeds as Senior Medical Officer, Andamans

CAPTAIN J H HUGO I M S, D S O, joins the Medical College, Calcutta, *vice* Captain Clayton Lane I M S

CAPTAIN CLAYTON LANE, I M S, becomes Civil Surgeon of Chapra, *vice* Captain R H Maddox, I M S, who has become Superintendent, Presidency Jail, Calcutta

CAPTAIN T H KELLY, F R C S (ED) has succeeded Captain R. Bird, M D, F R C S, I M S, at the Calcutta Medical College

MAJOR D T LANE, I M S, having left Murree, has become Civil Surgeon, Ferozepore

CAPTAIN W B THOMSON R A M C assumed collateral civil medical charge of Meiktila district on 15th November

LIEUTENANT MANUK, I M S assumed civil medical charge of Bannu district, relieving Lieutenant O M Goodbody, I M S, on 21st December 1901

ON return from furlough Major H M Morris, I M S, was appointed Civil Surgeon of Shahpuri

MAJOR D PRAIN, L D, I M S, has returned to the Botanic Gardens, Calcutta, from leave

MAJOR J J PRATT, I M S, has been transferred as Civil Surgeon from Agra to Muttra

CAPTAIN A T GAGE, I M S Curator, Royal Botanic Gardens, Calcutta, was granted six weeks' privilege leave from 3rd January

MAJOR C R M GREEN, F R C S, I M S becomes Civil Surgeon, Simla *vice* Lieutenant-Colonel Lukis, I M S

ON the return of Lieutenant Colonel McConaghey from Bengal to Lucknow, Lieutenant-Colonel J Anderson, I M S, reverted to Agra as Civil Surgeon

LIEUTENANT COLONEL O C VAID, I M S, has become Civil Surgeon of Mainpuri

LIEUTENANT COLONEL F S PFCK, I M S, is appointed Honorary Surgeon to the Calcutta Light Horse

THE following Medical Officers in Bengal become Civil Surgeons of the first class—Lieutenant Colonel D G Crawford, I M S, *vice* Lieutenant Colonel Bovill I M S, retired, Lieutenant-Colonel R R H Whitwell, I M S, (on leave), *vice* Lieutenant-Colonel J M Zorab, I M S, retired

Major U N Mookerjee, I M S during the absence of Lieutenant-Colonel Whitwell, also Major F A Rogers, I M S, and Lieutenant Colonel T Grainger, I M S

LIEUTENANT COLONEL J F MACLAREN, I M S, Civil Surgeon of Mussoorie, N W P, was granted six weeks' privilege leave from 20th December last.

CAPTAIN BIRDWOOD, I M S, goes to Jhansi as Civil Surgeon, Major L G Fischer, I M S, to Dehra Dun, Major H W Elpick, I M S, to Sultanpur, Captain W Selby, I M S, to Azamgarh, and Major J Morwood, I M S, to Sitapur

OLD Edinburgh men will note with interest that the present winter session is the thirty fourth of Sir William Turner's professorship, the thirty second of Professor Crum Brown's, and the thirty first of Professor Simpson's, whilst next year both Professor Fraser and Professor Annandale celebrate the twenty fifth anniversary of their appointment to the Chairs of Materia Medica and Clinical Surgery respectively. —(*Caledonian Medical Journal*, January, 1902.)

THE services of Major F C Pereira, M B, I M S, are replaced at the disposal of the Madras Government, those of Captain H. A. Smith, M B, I M S, and Captain C Milne at the disposal of the N W P and Oudh Government, and those of Captain W H Oir I M S, at the disposal of the Bombay Government (for famine duty)

THERAPEUTIC NOTES

WE direct attention to the **Soloid Urine Test Case** introduced by Messrs Burroughs, Wellcome & Co. It contains an albuminometer, urinometer, test papers, measure, and spirit-lamp, together with soloid reagents, all in a neat and portable case

The same firm has submitted specimens of **Tabloids of Hydrarg Perchlor and Potass Iodid**, a most convenient arrangement for patients, who can be directed to carry them in their pocket and take their dose regularly

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BOOKS, REPORTS, &c, RECEIVED

Bombay Mofussil Hospitals Report.
The Pastour Institute (Kasauli) Report
The Bombay Medical and Physical Society's Transactions
The Transactions of Madras B M A
The Röntgen Rays, by Williams (MacMillan & Co.).
Rough Notes on Remedies, by Murray (H K Lewis).
Punjab Administrative Report
Bengal Administrative Report
The Sanitary Commissioners' Annual Report
Lieutenant Colonel Davis' Handbook of Hygiene. (O Griffin & Co.).
Reprints from Baumgartner's Jahresbericht
Nathaniel's Encyclopedia of Medicine Vol I (W B Saunders & Co)
Text-Book of Pathology by Hecton (W B Saunders & Co)
Quina's Diet of Medicine in 1 Vol. Edited by Montague Murray
21s (Longmans & Co)
Shaefer's Lessons in Practical Physiology (Longmans & Co)

COMMUNICATIONS RECEIVED FROM —

Lieut Col D G Crawford, I M S, Hughli Major D M Mohr I M S, Calcutta, Lieut Col R D Murray, I M S, Calcutta Lieut Col McKay, I M S, Jubbulpur Dr J W W Stephens Nagpur Major O Pinto I M S, Mr L D Spencer Darjeeling Major Maynard, Patna, Capt. Jackson, Poona, Capt Maddox Calcutta Major Banatvala, I M S, Bilaspur Major Calvert, Cuddack, Lieut W M Houston, I M S, Capt. Dr Ke Brockman Major A H Nett I M S Darjeeling Major P W Gorman Mian Mir Capt J G Murray, Mian Mir Capt B C Oldham, I M S, Calcutta Major Harold Brown I M S, Alipore Capt. McArdle, I M S, Calcutta Major E Roberts, Simla.

Original Articles.

NOTES ON THE RADICAL CURE OF
HYDROCELE AND HÆMATOCELE.

BY W J NIBLOCK,

CAPTAIN, I M S

General Hospital, Madras

A—HYDROCELE

THE radical cure of hydrocele is a subject which should be of unusual interest to the general surgeon and practitioner in India owing to the great frequency with which he has to deal with this affection. In the Madras General Hospital, for instance, more major operations are done for the radical cure of hydrocele than for the cure of any other single disease.

The notes which follow are based on 291 operations for radical cure performed by me in the General Hospital, Madras, during the past three years. Of these 142, *i.e.*, almost 50 per cent were for double hydroceles.

Race of patients—Europeans, 5, Eurasians, 46, Hindus, 212, Mussulmans, 28

<i>Ages</i>	—11 to 20	31
	21 " 30	112
	31 " 40	75
	41 " 50	39
	51 " 60	29
	61 and over	2

Total 291

Variety of hydrocele—Almost all were of the ordinary vaginal variety. Two cases of large *hernia-en-bissac* were met with, also a few infantile and congenital cases.

Size of hydrocele—Very few contained less than ten or twelve ounces of fluid. The amount present was generally much more than this. Amongst my largest were the following—

172 ounces in right, 4 ounces in left tunica vaginalis	= 176 oz
146 " " left, 28 " " right " "	= 164 "
120 " " both " " right " "	
88 " " " " " " " "	
79 " " one " " " " " "	
60 " " " " " " " "	

Several others contained over 40 ounces.

Complications—Thirty were acutely inflamed, 26 suppurating, 31 were evidently filarial (but without elephantiasis of scrotum). Several were complicated by abscess, ulcer or sloughing of scrotum. Inguinal hernia was not uncommon.

Operations performed—The different operations performed were—tapping with injection, incision, incision with eversion of sac, partial excision of sac, castration.

I—Tapping with injection

I have performed this operation seventeen times on patients unfit for, or who objected to, more radical treatment.

The drug used in all these cases was liquefied carbolic acid in amount varying from 1 to 2 drachms according to the size of the hydrocele. No anæsthetic is necessary for the operation, which is comparatively painless. If the patient be very nervous a little cocaine may be applied to the skin where the trochar is to be inserted. The acid is injected through the cannula by means of an ordinary hydrocele syringe, great care first being taken to make sure that the cannula is in the sac. None of the acid should be allowed to run on to the scrotum, as this gives rise to severe subsequent irritation, and to avoid this a wipe should be carefully arranged all round the cannula. Vaseline may be used to smear the scrotum round the cannula, but an objection to it is that it interferes with the application of collodion, &c., afterwards. If the carbolic acid does unfortunately run on to the scrotum, its action can be completely neutralized by the immediate application of alcohol to the part.

The acid is injected slowly, and the puncture carefully closed, either with a small tuft of cotton-wool and collodion, or a small piece of lint soaked in Friar's Balsam. After the acid has been thoroughly distributed all over the interior of the sac, by working the latter backwards and forwards with the fingers, a pad of cotton-wool and a suspensory bandage are applied. The patient should be confined to bed for a few days at least. There is generally some swelling afterwards, but this subsides as a rule in about a week.

The chief *objections* to the injective treatment are—

(1) *Sloughing and cellulitis*—Although I have never had this complication in any of my cases, I have known of one case where death occurred from this cause. This sequela is generally due either to too much of the injection having been used, or to the drug having been injected into the cellular tissue of the scrotum instead of into the sac.

(2) *Recurrence*—This may be due to the sac not having been obliterated at all or only partially obliterated. I have operated, by the open method, on many recurrent cases in which, as a result of previous injection, the sac had become adherent at several places, thus giving rise to several hydroceles instead of one.

The operation does not appear to me to be suitable for hydroceles such as one usually meets with in Madras, as in the vast majority of cases the sac is so large and so thickened that radical cure by this method is manifestly impossible. Even in cases where the hydrocele has not reached such large dimensions, as is the rule in England, the operation is not to be recommended as recurrence of the hydrocele is far from uncommon. Lockwood* states that he made an abstract of

* The Radical Cure of Hernia, Hydrocele, and Varicocele, p. 237

notes of 74 patients who had been treated in St Bartholomew's Hospital during ten years by various kinds of injections (usually the Edinburgh Tinct Iodi). The 74 patients had had 93 injections. In six the result was doubtful, they were not cured when last seen. In 24 the injection had undoubtedly failed. The fate of the rest was unknown. It will thus be seen that, according to these statistics, the chances of complete failure are 32 per cent.

I give these figures of Mr Lockwood as it is notoriously difficult to follow up the after-history of cases in this country, where I am of opinion that the percentage of failures is probably even greater than the above.

(3) In a fairly large proportion of cases the testicle becomes chronically enlarged and inflamed after this treatment.

(4) Another objection to the treatment is that patients—at any rate in this country—will not lie up after it, as they consider it of no importance, nor will they keep the puncture wound covered and the part clean. The result is that in many cases severe inflammation not unfrequently followed by suppuration occurs.

The operation is of course contraindicated in congenital hydroceles, and is risky in cases where hernia is present in addition to the hydrocele.

II—Incision

This method simply consists in making an incision into the sac, emptying it, and packing the cavity of the sac with antiseptic gauze strips. The cut edges of the tunica may be sutured to the skin, but I fail to see any special advantage in doing this. The strips can usually be removed in five or six days or even earlier. I have adopted this method in nine cases, which were either inflamed or suppurating.

III—Incision with eversion of sac

This operation I have performed in 60 cases with good results. The different steps of the operation resemble those of the next one to be described, viz, *partial excision of the sac*, except that the parietal part of the sac instead of being excised is simply slit longitudinally, turned inside out, and brought over the back of the testicle. No sutures are usually required to keep the sac in position if it be properly everted. The method is admirably suited for small hydroceles with thin walls, but is of rather limited applicability in Madras where the hydroceles are usually large and the sacs thick. It has the advantage of taking a very short time—4 or 5 minutes—in its performance, and of being accompanied by a minimum amount of hæmorrhage as no vessels likely to cause appreciable bleeding need be cut across.

The skin can generally be sutured, without drainage, and the patient is usually able to leave hospital by the tenth or twelfth day.

IV—Excision of parietal part of sac (Partial excision of sac)

This method I have carried out in 191 cases of hydrocele (not including 51 cases of elephantiasis scroti in which I have performed it), and, as it is in my opinion the most universally applicable of all operations for hydrocele, I propose to describe it in detail as it is now performed by me.

The patient is prepared in the usual way, i.e., on the day before operation a purgative is given, the scrotum and surrounding parts are carefully shaved, thoroughly scrubbed with soap and water, then with turpentine, and finally with 1 in 500 perchloride of mercury lotion. A piece of gauze soaked in 1 in 2,000 perchloride of mercury lotion is then laid over the part, bandaged on, and not taken off until the patient is brought to the operating theatre.

In the theatre after the patient has been anesthetized the gauze is removed, the part is again washed with turpentine and then with 1 in 2,000 solution of biniodide of mercury in methylated spirit. The part to be operated on is surrounded with sterilized towels which have been wrung hot out of carbolic lotion (1 in 40). The instruments used for the operation are first either boiled in water to which bicarbonate of soda has been added (a drachm to the pint), or are kept for half an hour in 1 in 200 formalin solution. Immediately before operation they are placed in 1 in 400 formalin.

One artificial sponge is usually sufficient for the operation, it is kept in 1 in 4,000 biniodide of mercury lotion out of which it is squeezed dry when required.

Operation—A longitudinal incision is made along the mid line of the raphe of the scrotum, its length varying with the size of the hydrocele.

The incision is made as low down on the scrotum and as near the posterior surface as possible. The advantages of the median incision, made as described, are—(1) There is a minimum amount of bleeding. (2) Subsequent contamination of the wound with urine is less likely to occur than when the incision is made in the ordinary way. (3) In cases of double hydrocele both sides can be easily operated on through the one incision. (4) The resultant scar is practically invisible.

Whilst the incision is being made the tumour is kept tense if necessary by pressure with the left hand behind the scrotum. The incision is deepened until the tunica vaginalis is reached. This is usually recognized without difficulty, and, when the sac wall is thin, is of a bluish colour due to the fluid being seen through it, when thick, it has a dense white fibrous appearance.

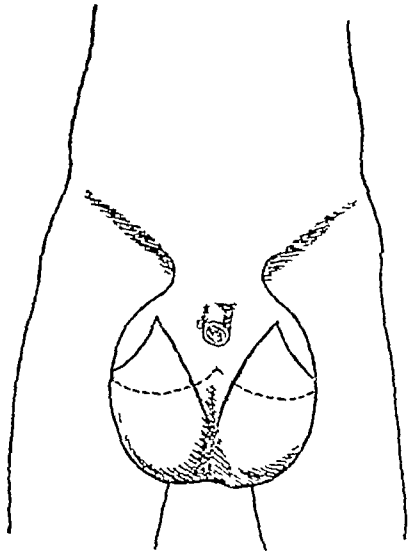
The tunica is exposed for the full length of the incision and then can generally be easily "shell-

ed out" from the subcutaneous tissues of the scrotum by the finger. No dissection is needed, as a rule, except when adhesions are present as a result of previous tappings. After the sac has been separated from the superficial tissues it can be brought out of the wound. It is then incised and the fluid allowed to escape. When the hydrocele is large, the sac is incised *before* it is brought out. With scissors the parietal part of the sac is now cut off all round, about half an inch or so from the testicle, special care being taken to remove a pouch-like prolongation of the sac which commonly runs upwards in front of the cord, and which is, I believe, the cause of many recurrences after this operation owing to its not having been completely extirpated. Up till now, as a rule, no vessels have been clamped, nor are any clamped ordinarily at this stage of the operation unless an artery is seen actually spouting when it is caught and ligatured. If a

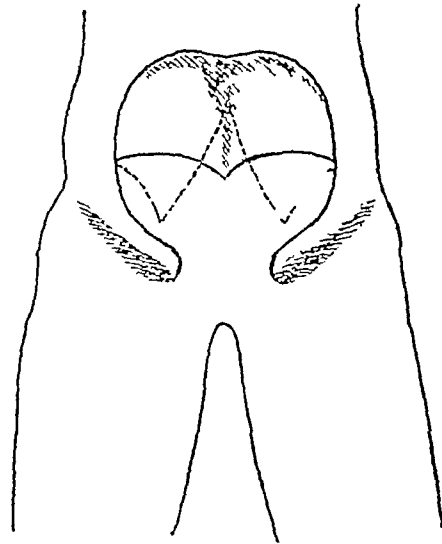
the testicles, several layers of sterilized gauze squeezed dry out of formalin (1 in 400) are then applied, covered by several layers of absorbent, and over this non-absorbent cotton-wool, and a muslin or 'dungary' bandage applied in such a way as to exert firm pressure on all parts of the scrotum, and thus prevent further bleeding. The bandage is put on so as to form a sort of cap firmly enclosing the scrotum, and ending up as a sort of double spica. This bandage is all-important, and if not properly applied may mar the success of the operation. It requires some practice before one can apply it correctly.

The operation is, as a rule, completed inside ten minutes unless complications arise, such as varicocele, lymphangiectasis, &c. The dressings are usually taken off on the second or third day, the gauze strip removed, and the dressings re-applied as before. Provided that the hydrocele

Front of Scrotum



Back of Scrotum



hydrocele be present on the opposite side it is treated similarly through the same skin incision. In the majority of my operations as at present done no vessels are clamped or tied, the bleeding which occurs being simply oozing and not of any consequence provided proper pressure be applied after the operation.

The skin-edges are brought together and sutured either with fine fishing-gut or horse-hair, leaving $\frac{3}{4}$ of an inch or less of the lower end of the incision unsutured. A strip of sterilized gauze, squeezed dry out of 1 in 400 formalin lotion is placed through the opening. The size of the strip varies with the hydrocele, for large hydroceles a strip 18 inches long by 2 inches wide may be required, for small ones a strip two or three inches long by $\frac{1}{2}$ inch wide will suffice.

The scrotum is next enclosed in a towel and squeezed dry, care being taken not to compress

be not a very large one the wound has generally healed, and the patient is able to leave hospital by the 12th or 14th day. The sutures are removed on the 8th or 10th day.

If the hydrocele be the size of a man's fist or smaller no drainage is required as a rule.

If it be unusually large the size of a man's head or larger, the redundant scrotum is removed.

The incisions here are different from that in the ordinary operation and are shown roughly in the diagram. The shaded portion represents that part of the scrotum which is removed. By these incisions the normal shape of the scrotum is retained. The resultant scar is Y shaped. In this operation several vessels require to be clamped twisted or tied.

In cases of inflamed or suppurating hydrocele it is usual to leave two inches, or even more, unsutured. The cavity is packed with 1 in 200 formalin gauze which is changed next day.

After four or five days in favourable cases it may be dispensed with. These cases are often very slow in healing and may take several weeks before they are fit to leave hospital. Most of the patients admitted with suppurating hydrocele are much broken down in health.

Remarks—In my first cases of partial excision of the sac, I took great pains to stop every bleeding point, and in many cases ran a continuous purse-string suture around the cut edge of the tunica vaginalis. The results are, however, quite as good by the method described which I have performed in my last 100 cases or so, and the time required for the operation is reduced to one-third the time necessary for the old operation. In only two cases has notable hemorrhage into the scrotal tissues occurred after the operation. In both it was due to the bandage having been incorrectly applied, and gave little trouble. There is no more pain complained of than after the ordinary operation, nor does any oedema of the penis supervene, provided that the bandage be properly adjusted.

A large amount of cotton-wool dressing is necessary, otherwise sufficient pressure cannot be put on when bandaging.

V—Castration

This I have performed in eleven cases of hydrocele usually in old men and suppurating hydroceles, or when the testicle was evidently disorganized and useless. In cases of large suppurating hydroceles in old and debilitated men I think it advisable to perform this operation, as by this means prolonged suppuration and a long stay in bed, which may exhaust all the patient's remaining strength, are avoided.

Results of operations—

(a) *Immediate*—All the patients recovered and left hospital apparently cured, except two who died.

(b) *Recurrence*—I have seen no recurrences in any of my cases except amongst those treated by the method of tapping and injection. The time is, however, too short to say anything definite under this heading.

(c) *Mortality*—

(i) *Ordinary cases*—235, no deaths.

(ii) *Suppurating*—Out of 26 suppurating cases operated on I have had one death (after simple incision). The patient was suffering from advanced valvular disease of the heart, from which he died after the wound had healed.

(iii) *Cases with acute inflammation*—30 operations with one death (after partial excision of sac). The hydrocele was just on the verge of suppurating. The patient was suffering from advanced malarial cachexia, and died three days after operation.

Total mortality—291 cases with 2 deaths, i.e., 68 per cent.

B—HÆMATOCELE

I have operated for radical cure of hæmatocele 48 times as follows—

(1) Usual operation (incision or excision of sac)—19

(2) Castration—29

(These figures do not include four cases of elephantiasis scroti in which the operation for hæmatocele was performed.)

Race—Eurasians, 1, Hindus, 40, Mussulmans, 7.

Ages—

11 to 20	1
21 " 30	8
31 " 40	13
41 " 50	10
51 " 60	10
61 and over	6
Total	48

Complications—Five were acutely inflamed, 21 were suppurating, abscess of the scrotum was present in 14, and sloughing of scrotum in one.

On looking at these figures one notes—

(1) That the patients operated on for this disease were, as a rule, older than those who presented themselves for radical cure of hydrocele.

(2) The large proportion of inflamed and suppurating cases, and of abscesses of scrotum. From these (added to the fact that the patients generally gave a history of previous hydrocele) I think one would be justified in surmising that the causation of most of them had some relationship with carelessness and sepsis in tapping hydroceles, and this is borne out by the statements made by most of the patients—that the pain and inflammation commenced after a tapping.

The method of radical treatment to be adopted is generally decided by the answer to the question—Shall I try to save the testicle or not? If the patient be a young man, the hæmatocele, a small one, and not suppurating, there can be no doubt that the answer is—Yes. If he be an old man, with a large suppurating hæmatocele, and the testicle disorganized, the answer is just as emphatic—No. Between these two extremes the decision may be more difficult, but in a young person I think we should make every effort to save the testicle even when the latter is apparently useless, always provided that his general condition is such as to justify the attempt. If, however, he is already much deteriorated in health, which is unfortunately often the case, the choice may rest between saving his life or the testicle, of course under these circumstances the testicle should be sacrificed.

In old persons when the testicle is disorganized, even although no suppuration is present, it is often advisable to remove it.

The operation generally performed, when the testicle is to be saved, is incision with, or without, excision of the parietal part of the sac. The latter is usually done when the hæmatocele is inflamed or suppurating, the former when no suppuration has occurred.

The details of the operations are practically the same as for hydrocele, but suppuration more often gives trouble in the after-treatment of the case.

Results of operations—All the 48 cases, with one exception, recovered. The fatal case was a patient suffering from suppurating hæmatocele with advanced ankylostomiasis. The operation was castration. When one takes into consideration the low state of health of these patients generally, a death-rate of 2.08 per cent cannot be considered high.

SOME NOTES ON CEREBRO SPINAL FEVER

BY MALCOLM MOORE, M.D.,

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FROM the columns of the *Indian Medical Gazette*, it would seem that this disease has of late been gradually calling for increased attention and observation amongst Indian Medical Officers, and that the observations, clinical and pathological, already recorded during the past two years would, if collected, form rather an important contribution to the descriptions which are available to the student in the ordinary text-books.

The admirable paper, or series of papers, lately circulated among the department, containing the observations of Captain C. R. Stevens, I.M.S., and Major W. J. Buchanan, I.M.S., upon this disease, must have aroused the attention of the profession locally. It is to these papers that I wish incidentally to draw attention, and testify to the debt which I personally owe to the same, in the belief that the somewhat indefinite and hazy ideas which I previously had upon the subject are shared by some other "Mofussil" medical officers, the multifarious nature of whose duties preclude them from the more methodical and intricate methods of investigation of disease which have characterised many of the contributions to these columns of late. Therefore the few notes which I append being in no sense intended to add to the "literature" of this subject, are merely adduced to shew the consonance of our observations here with those already recorded by the above-mentioned observers, a consonance the more valuable, practically, from the fact that in nearly all the cases it could not have escaped the most superficial observer.

I hope that other surgeons will record the clinical or pathological aspect of their cases, I believe that this will tend to obviate the danger

of referring to the headings "Pneumonia," "Meningitis" or "Rheumatic Fever," cases which should have come under the disease at present under consideration. In four of the cases appended, the Hospital Assistant, an intelligent and observant man, had diagnosed pneumonia. A fifth case had been put down as rheumatic fever. One case I mistook myself for hæmorrhage (Ingravescent). In two cases, lately occurring amongst boys here, an early diagnosis of enteric fever had been made. I daresay that this is not a singular experience, and that many of us would be all the better for a closer acquaintance with the clinical aspects of the disease in India, and of a few hints as to the possibility of prevention. As to treatment I can offer no suggestions beyond the remark that the vital points seem to be the provision of space and quiet, the administration of stimulants and nourishment, and to keep a sharp look out for incidental complications.

To classify roughly the aspects presented by some ten cases, or so, which have been met with here during the last two months, I would state that, as to origin and causation, two cases came from the grinding shed, two from wool carding, three had been confined in a disused and filthy building used temporarily as a jail.

The history of the remainder pointed to, insanitary surroundings or over-crowding. All were males, all were poor, and nearly all were of depressed vitality and impoverished resisting power, all occurred in the cold weather.

I had previously understood that heat—direct—solar—was an indispensable factor in the production of this disease, and I can remember the fact of an outbreak amongst the Royal Irish Constabulary during an exceptionally hot summer about twenty years ago, which was attributed to cervical exposure. The micro-organism probably requires a certain elevation of temperature for its evolution, but the cases of which I at present write occurred here in distinctly cold weather, the minimum night temperature being about 40°–45° F. Personally, I am quite satisfied that the main factors in an epidemic of this disease are over-crowding, depressed vitality, and the effects of certain occupations. The first-named is, I think, the chief ætiological factor. Into the mysteries of the accompanying micro-organism I am not prepared to enter. This question of ætiology is probably the most important one with which we have to deal. There seems to be a consensus of opinion that occupations which involve the inhalation of dusty material are the most fertile source, but, from our experiences in the Mewar, there is good reason to believe that this is not an indispensable factor. It would indeed be illogical to expect that there should be any such, but I am personally satisfied that over-crowding is a very potent factor in the production of the disease, and I may add that in these

remarks I have the support of the Revd J Shepherd, M.D., with whom I have worked during our local epidemic, and whose experience of natives and their surroundings, medically speaking, is probably unrivalled.

Pathologically—It is under this heading that the most remarkable agreement has been found with the observations previously recorded by your contributors. We have been able to obtain a *post-mortem* examination upon only five cases. In all there was the most distinct evidence of leptomeningitis. In all, the cerebral convolutions were more or less covered with yellowish lymph, dipping into the sulci, in all, the spinal canal contained a faintly red and faintly turbid fluid, and in three cases the lateral ventricles contained a similar exudation. In three cases the lungs were somewhat engorged, and in a fourth case one lung was hepatized. I fear that these last items tended to confirm the assistant in his diagnosis of "pneumonia." I found no evidence of distinct cerebral hæmorrhage to justify my own mistaken diagnosis of one case. Four of the fatal cases died within three days, thus pointing to the fulminating type. Clinically and pathologically I would lay stress upon the co-existence of pulmonary complications. There was nothing noticeable in the abdomen *clinically*.

In only two cases could the onset be described as *sudden*, one of these cases died in 24 hours. The first thing complained of in all was "*fever*," which, in no case, rose above 104° , the second, and most universally present, was a *mental obscuration and hebetude*, a difficulty in receiving or expressing ideas, hardly amounting to aphasia, and most characteristic. From a diagnostic point of view I would be inclined to give this symptom the precedence of *pain*, whether of the head or neck. The patient, if asked whether he felt pain, would say after an interval indistinctly "Pain—yes," and would then subside into apathy, without helping us to localise the seat of the pain or to judge of its character. In all cases the state of the *mouth and tongue* was quite characteristic, there was much sordes, and in two cases, dribbling from the mouth was constant. In many cases the tongue was by no means unlike that of enteric fever towards the later stages, this seems to be worth remembering.

As to *pain* in only two cases would I call this a *marked* symptom—at any rate not nearly so prominent as I should have expected. I have no doubt that it is somewhat marked by the obscuration of the senses, generally, above-mentioned but in five cases there was very distinct *rigidity* of the neck muscles (in one case *torticollis*) accompanied by painful sensations. In three cases there was a distinct tendency to throwing back the head. No actual *opisthotonos*. The attitude was in nearly all cases uniform, the *decubitus lateralis*. The legs

drawn up, the patient generally "huddled together," and, in many cases, shading his face from the light by hands, blanket, &c. So much for the prominent and obvious signs, the most valuable of which, from a diagnostic standpoint, I believe to be, the mental obscuration and apathy almost comatose, the state of the mouth, cervical rigidity, and, lastly, pain—a very variable factor.

The abdomen shewed nothing on inspection to suggest meningeal affection the most obvious manifestations, after those above enumerated, were pulmonary, the laboured respiration, widely diffused rales, extensive dulness, and evidences of lung condensation would easily lead any one who was not on the *qui vive* to a diagnosis of pneumonia as the primary and not the incidental affection. As to purely cerebral and meningeal manifestations, it is upon this point that we appear to need more light, for their prominence would not seem to be sufficient in view of the pathology of the disease. In only five cases was distinct spastic trouble found. There was no squinting there was some photophobia, and in two cases paresis was found (one of these was the case diagnosed as hæmorrhage), I found no actual paralysis. In three cases Kernig's symptom was found, vomiting in two cases, and diarrhoea in three.

This closes the list of the main clinical and pathological points to which my attention had been directed by the papers above mentioned. I think there could be rational doubt of the correctness of our diagnosis in the cases from which those notes have been compiled. The notes are imperfect and "diffuse," but, such as they are, they represent, clinically at all events, the main points which were noticed by Dr. Shepherd and myself during an epidemic in Udaipur. And I would add that, should any patient shew symptoms of an approach to the typhoid state without concomitant abdominal troubles, evidences of pulmonary and cerebral disturbance, and a general state of nervous prostration, attended by a temperature the elevation of which is quite inadequate to account for the same, then I think the observer will do well to look out for epidemic cerebro spinal fever.

It might be worth the consideration of other surgeons in India to record their experiences in this disease, more especially as regards the more purely meningeal and cerebral symptoms. In what proportion of cases is *spasm* a marked feature? and to what degree? the same as regards *coma*, and photophobia. Is delirium to be universally expected? Many such points require investigation. I had previously considered that *spasm* and *coma* were essential features of the disease, and I am still of the opinion that meningeal trouble ought to be the chief factor in directing our attention to the cerebral origin of the affection. Captain Stevens

and Major Buchanan are of the opinion that, *during an epidemic*, the diagnosis of the disease is easy with this opinion I fully concur, but I also think that, where cases occur more sparsely, we want some constant and distinct symptom of a purely cerebral type whereby the Scylla of pneumonia and the Charybdis of enteric fever may alike be avoided, and as diagnosis, from a utilitarian point of view, may be considered as one means to the great end of prevention, can any more definite means be suggested for the stamping out of an epidemic than the making of pucca floors and the covering of the faces of individuals engaged upon dusty occupations, such as grinding and wool sorting? I fear that I am personally unable to offer any such suggestions, beyond the prevention of over-crowding, and, possibly, the necessity of familiarising medical subordinates with the main symptoms of the disease, so as to ensure an early notification of cases which may be but the preliminary of an outbreak.

Since writing the above notes I have seen five more cases here, chiefly among children. No *post-mortem* examination was available, but, clinically, they served to endorse fully the remarks previously made except for the fact that the pulmonary complications were not universally present, and that the similarity of the disease to enteric fever in certain stages was more marked. Further, they tended more to assume the fulminating type. With these cases a course of treatment quite similar to that usually adopted in simple meningitis has apparently been attended by good results.

THE IMPORTANCE OF THE ROLE PLAYED BY MOSQUITOS IN TROPICAL PATHOLOGY *

With a brief description of the differences between Anopheles and Culex and a Classification of the Indian Anopheles

By W. GLEN LISTON,

CAPTAIN, I. M. S.

EXPERIENCE has taught many people living in "Malarious" districts that mosquitos play an important part in causing malarial fevers. Thus Celli remarks that the peasants in the Agro Romano are in the habit of saying, "In such a place there is much fever because it is full of mosquitos." He further states that "when the shepherds return from the Apennines, where they have passed the summer, to their cabins in the Roman Campagna, generally in the months of September and October, they do not occupy them before thoroughly smoking them to drive out the numerous mosquitos."

* A paper read at a meeting of the Bombay Medical and Physical Society

Koch has pointed out that in German East Africa the natives of the highlands declare that when they visit the unhealthy lowlands they are bitten by an insect they call "Mbu" (mosquito) with the result that they get fever which they also call 'Mbu'.

In India, despite the warm climate, the native has been in the habit of completely covering his body and face with a blanket while sleeping at night with the intention of keeping away the chills of ague.

No medical writer, however, attempted to prove the connection between mosquitos and malaria till the American Physician King in 1883.

In 1884, Laveran suggested that the parasites discovered by him might undergo further development in mosquitos.

Manson in 1894, argued that as the plasmodium was a parasite it must keep up its existence as a species by passing from host to host. He pointed out that the flagellum comes only into existence outside the body, that, therefore, its function must be outside the body. That as the parasite is enclosed in a blood corpuscle while in the circulation, and had not been discovered free in any of the excreta, he concluded that it must be removed from the circulation by some blood sucking animal, in all probability the mosquito.

In 1897 Ross, convinced of the correctness of Manson's hypothesis, succeeded in cultivating one of the human malarial parasites in two species of mosquitos of the genus *Anopheles* which he at that time called "dappled winged" mosquitos.

In the following year, owing to certain difficulties in cultivating the human malarial parasites, Ross devoted his attention to the malaria of sparrows. He successfully followed out the life history of one of the malarial parasites of sparrows (*Haemaphysalis Relicta*). He demonstrated the life cycle of this parasite in the mosquito, successfully infected "grey mosquitos" of the *Culex pipiens* type with the parasite, and thereafter with these infected mosquitos communicated malaria to healthy sparrows.

Ross' discovery gave a new impetus to the mosquito malarial theory of the propagation of malaria. His experiments were successfully repeated in the case of a man, by Grassi, Bastianelli and Bignami in the Santo Spirito Hospital at Rome.

Many workers had now confirmed Ross' experiments, among them Daniels in 1898-99, Koch, and many Italian observers, especially those mentioned above.

Although the majority of scientific men were by this time convinced of the correctness of Ross' observation and deductions, still some sceptics were to be found who put forward endless objections, the outcome of imperfect acquaintance with the subject. To silence these critics, and to demonstrate in a popular manner

the truth of the mosquito malarial theory, Manson in 1900 devised two simple yet convincing experiments

The first experiment consisted in infecting in London a healthy adult, by allowing mosquitos infected with the benign tertian malarial parasite to bite him. The mosquitos were fed on specially chosen benign tertian cases of ague in the Santo Spirito Hospital, Rome, and were transported to London by mail train. There they were allowed to feed upon Dr. Manson's son, who had volunteered to subject himself to the experiment. The result of this experiment was, that after a certain incubation period Dr. Manson's son developed benign tertian malaria in Britain, a country in which primary malaria is now almost unknown, and in which Dr. Manson's son had resided since he was three years old. It is worthy of notice that this primary infection was followed by a relapse some months later.

The second experiment consisted in erecting a mosquito proof hut in one of the most malarious places in the Roman Campagna near Ostia. In this hut there lived throughout the height of the malarial season (July to October) Drs. Sambon and Low, Signor Terzi and then two Italian servants. The only precautions adopted against malaria were that they lived during the night in this mosquito-proof hut. They went about the country freely during the day, but were careful to be indoors from sunset to sunrise.

Drs. Sambon and Low returned to England in November 1900 in robust health, having demonstrated that by adopting suitable precautions it is possible to live throughout the malarial season in one of the worst haunts of that scourge, without contracting the disease. Almost all the peasants who lived near this hut contracted malaria. It is stated that of sixteen police agents who were sent to Ostia, and who remained in that place only for part of a night, all contracted malaria about a fortnight later.

In addition to these two experiments, many similar and confirmatory experiments have been made in Italy and India.

Those of Celli and Grassi in Italy, and Forsside and Buchanan in India, deserve special mention.

Although many such successful cultivations of the malarial parasites in the body of mosquitos of the genus *Anopheles* have been recorded, yet not a few failures have been noted. In particular some early experiments by Ross and Daniels in Calcutta, and by Buchanan at Nagpur, demand notice.

Ross attributes the failure of his experiments to the fact that the *Anopheles* he used were isolated in test tubes and were not fertilized. On the other hand Daniels suggests that the failure of the same experiments was probably due "to the climatic conditions," the first stage, the for-

mation of *Coccidia*, being inhibited by the cold.

Yet, again, Buchanan, in explaining the failure of his attempt to communicate quaternary ague by the bite of infected *Anopheles*, remarks

- (1) The man experimented on might be immune
- (2) The *Anopheles* did not bite at the time when the parasite was in a suitable condition
- (3) The season was not one in which the quaternary parasite could develop properly
- (4) The species of *Anopheles* used in the experiment was not the correct one

Which of all these explanations is the correct one? From some recent observations (which have not yet been completed) made by the Royal Society's Malarial Commission to India, it would appear that *Anopheles Rossi*, the most common *Anopheles* in India, does not communicate malaria. Some 300 *Anopheles* of this species have been examined by them without finding a single one infected. It is noteworthy that in the same houses from which the *Anopheles Rossi* were obtained another species, *Anopheles Culicifacies*, was found infected to the extent of 4 per cent of those examined. These facts, taken in conjunction with the observation that it has been possible for me in a perfectly malarial free house to collect from 20 to 40 *Anopheles Rossi* daily for more than two months, almost proves that *A. Rossi* is incapable of transmitting malaria from host to host. Actual cultivation experiments, however, still remain to be done to complete the proof.

Again the mere presence of *Anopheles* mosquito in any place, even although that particular species of *Anopheles* has been proved to be a malarial carrying species, does not make that place an unhealthy malarial haunted locality.

Nuttall has shown that in England *Anopheles Maculipennis*, *A. Bifurcatus*, *A. Nigripes* have been found in districts where there is no record of malaria having previously existed, and where at the present time there is certainly no malaria.

Celli in like manner has shown, that in certain elevated and healthy localities, *Anopheles* could be found. Malaria was unknown in these places.

Malaria is not the only disease that can be communicated by mosquitos of the genus *Anopheles*. James has shown that he was able to cultivate the Filaria Bancrofti in *Anopheles* mosquitos.

Dr. Chatterjee of Calcutta has confirmed these experiments by finding a fully developed worm in an *Anopheles* caught in Calcutta.

The above remarks will readily convince all of the important rôle played by mosquitos and of the genus *Anopheles* in particular in tropical pathology.

It will also be noted that a superficial acquaintance only of the haunts and habits of *Anopheles* and of the different species of *Anopheles* is not sufficient to enable us to take full advantage of the knowledge we already possess, *viz*, Malaria is communicated by mosquitos of the genus *Anopheles*.

It would be a gigantic task, a task beyond human power, to endeavour to prevent malaria by the extermination of *Anopheles* mosquitos. Such complete measures do not seem at all necessary. Malaria-bearing mosquitos exist in England at the present day, although malaria for some time has been banished from that country. Nay more, the most common species of *anopheles* in India is one which does not appear to communicate malaria.

The task, therefore, of combating malaria by a crusade against *anopheles* is very considerably simplified, but such a task will not be successfully accomplished unless our knowledge of the haunts and habits of these insects is even more completely understood than it is at present.

It is with a view to interest you in the study of mosquitos that I have undertaken this demonstration. In order that it may be more generally useful to you, I think it will be necessary for me to first direct your attention to the differences between *Culex* and *Anopheles* mosquitos in their various phases of egg, larva, pupa, and imago.

Mosquitos or gnats belong to the sub-division Culicidae of the order Diptera of the great class of Insecta. All members of this order during their life history undergo a complete metamorphosis.

The young mosquito escapes from an egg which floats upon the surface of water as a worm-like larva. The larva swims about in the water, it eats greedily, and rapidly grows, casting its skin several times in the process of growth. The larva having attained its full development is converted into a coma-shaped nymph or pupa. The pupa is a resting stage, in that at this time no food is ingested, but profound anatomical changes are occurring, which adapt the future insect for its life in the air. The adult insect or imago escapes from its pupa case with wings and legs adapted for its new life.

In describing the general anatomy of the ovum, larva, pupa, and adult mosquito, it will be well to compare and contrast these stages of the life-history in the genus *Culex* and *Anopheles*, completing this description by a table of differences between the two genera.

Mosquitos' eggs are laid on the surface of water. From 100 to 300 eggs are laid by each female at one time. The eggs may be either adherent together to form a clump or separate from one another.

Culex mosquitos generally lay their eggs in a boat-shaped dark brown mass. This boat mass

consists of about 250 eggs glued together in their long axis and forming a diagonal shaped floating body. (For drawings illustrating these and subsequent descriptions see 'Malaria' by Angelo Cilli, translated by J J Eyre, and other recent works.)

Anopheles' eggs, on the other hand, are laid separately and are not adherent to one another, they may, however, lie parallel to one another or form patterns on the surface of the water.

When examined with a lens the egg of a *Culex* is seen to be long and narrow. It is more pointed at one end than at the other. It is attached to other eggs in its long axis. The broader end of all the eggs lies on the surface of the water.

An *Anopheles*' egg appears as an oval body just capable of being detected with the naked eye. One end of the egg is broader than the other. The egg, however, is not completely circular in transverse section. One side of it is more rounded than the other. The egg floats with the rounded side on the surface of the water, the more flattened (and slightly concave surface in the long diameter) is uppermost. The appearance thus roughly resembles a boat. At the sides of the egg, there are two air cells which occupy a little more than the middle third of each side of the egg. The air cells act as floats for the egg.

The larva escapes from the egg in favourable circumstances in from two to three days. The egg ruptures at its broader end in almost a complete circle, a cup-shaped portion is thus detached from the rest of the egg. Through this aperture the young larva escapes head first. The body of the larva is divided into three regions (1) the head, (2) the thorax, (3) the abdomen.

The head of the larva is supplied with masticating organs and with two stout bunches of hairs of a dark brown colour. The hairs have a sort of spiral arrangement and are slightly curved. One bunch is situated on each side of the anterior end of the head. These bundles of hairs have been called by Nuttall the "brushes," while others have named them the rotatory or whirling organs. They help to direct particles of food into the mouth.

The thorax is considerably larger than the head especially in the adult larvæ.

The abdomen consists of nine segments. Each segment is furnished with hairs. The eighth abdominal segment is modified in connection with the respiratory apparatus. On either side of the median line of the abdomen two tubes will often be seen, which open on the eighth abdominal segment. The manner in which these tubes end at the eighth abdominal segment constitutes a striking difference between the larvæ of *Culex* and *Anopheles*.

In the genus *Culex* the air tubes are carried into a dorsal prolongation of the eighth abdominal segment.

In *Anopheles* the tubes open directly upon the dorsal aspect of the eighth abdominal segment.

On account of this dorsal prolongation of the breathing tubes *Culex* larvæ are able to keep their body at a greater distance from the surface of the water. They hang down suspended from the surface by this prolongation of the breathing tubes at an angle of from 50° to 60° with the surface.

Anopheles larvæ, on the other hand, lie almost parallel with the surface of the water.

The movements of the two genera of larvæ is very different.

Culex larvæ when disturbed wiggle with a figure-of-eight movement to the bottom of the pool in which they lie.

Anopheles larvæ, on the other hand, when disturbed move backwards with a sharp side-to-side movement of the tail. They may, when much disturbed, sink down rapidly with hardly any movement of the body.

The larva of *Dixa* is much more likely to be mistaken for an *Anopheles* larva than a *Culex* larva would be. It, like *Anopheles*, may float just beneath the surface film. A *Dixa* larva, however, when disturbed, swims head first and not tail first like *Anopheles*. In its general structure, too, it differs from *Anopheles*, in that the head, thorax, and abdominal segments are of a more uniform size, and its stigmatic apparatus (the openings of the air tubes) is much larger than in *Anopheles*.

The pupal stage of a mosquito is very different from the larval stage. The most noteworthy changes that have taken place in the last moulting, are—(1) the change of position of the openings of the respiratory tubes. In the larva, the respiratory tubes open near the tail, in the pupa, they open near the head.

(2) The head and thorax are enclosed together in a transparent shell, through which the parts of the developing adult or imago can be made out. The masticatory apparatus of the larva is gradually converted into the suctorial implements of the adult. For these reasons, therefore, the pupa is unable to feed.

The pupæ of *Culex* are readily distinguished from those of *Anopheles*. Here again, as in the larva, the spiracles of the respiratory tubes are considerably longer in a *Culex* pupa than in an *Anopheles* pupa. Moreover, the shape of these tubes is different. In *Culex* they are long and narrow, in *Anopheles* they are shorter and more trumpet-shaped or expanded at their distal extremity.

After two days, as a rule, the pupa case ruptures along its dorsal aspect and allows of the escape of the adult insect.

As already remarked, the masticatory organs of the larva are replaced by the suctorial apparatus of the adult insect. This apparatus is enclosed in a long central projection from the front of the head called the proboscis. On either

side of this are two feelers or palpi. Slightly above and behind these are the antennæ. These organs are of importance in differentiating between the genus *Culex* and *Anopheles*, and in distinguishing the male from the female insect.

The males are distinguished from the females in both genera by having more feathery antennæ than the females.

The genus *Culex* is distinguished from the genus *Anopheles* by the length of the palpi. In the genus *Culex* the palpi in the female are shorter than the proboscis, while in the male the palpi are longer than the proboscis and are often hairy.

In *Anopheles* both in the male and female the palpi are almost the same length as the proboscis. In the male *Anopheles* the palpi are in addition clubbed at their distal extremity.

Culex, however, are generally easily distinguished from *Anopheles* by the position they each assume when resting on any surface.

A *Culex* mosquito carries his abdomen at an angle to the head and thorax, for this reason it appears hump-backed.

An *Anopheles*, on the other hand has its head, thorax and abdomen in one line.

It thus happens that when the proboscis is directed towards the surface on which the *Anopheles* mosquito rests, its abdomen is tilted up in the air. In extreme cases an *Anopheles* mosquito may thus sit almost at a right angle to the surface on which it rests and appear like a thorn in the wall. The most common angle which an *Anopheles* makes with the surface on which it rests, is one between 30° and 40° .

In the genus *Culex* the proboscis is thin when compared with *Anopheles*. The apparent thickness of the proboscis in an *Anopheles* is due to the fact that the palpi lie alongside of the proboscis and are of equal length with it, the palpi and proboscis to the naked eye appear as one organ.

In other respects, particularly as regards the legs, a *Culex* mosquito looks altogether more coarse and inelegant than an *Anopheles*.

The wings of *Anopheles*, too, are adorned with dark and light scales in alternate patches, making thus a beautiful pattern which differs in the different species of *Anopheles*. *Culex* mosquitos do not, as a rule, have any such markings on their wings.

I must now pass on hurriedly to describe to you the various species of *Anopheles* found in India. I will not detain you with a description of the parts of the adult mosquito.

In distinguishing the various species of *Anopheles* the best guide to take to begin with, are the palpi.

These you know are the two feelers which lie alongside of the proboscis.

These palpi may or may not have bands of dark and light scales. There are only two Indian *Anopheles* which have entirely black palpi.

These are *Anopheles Lindesani* and *Anopheles Barbirostris*. They are both rare mosquitos the former is found in the hills, the latter in Bombay and Calcutta near the coast. I have not met with it in the interior of the country. The tarsal joints in *Lindesani* are unbanded. There are bands on the tarsal joints in *Barbirostris*. Those *Anopheles* which show bands on the palpi may have either four or three bands. I know of two mosquitos which have four bands on the palpi, viz., *A. Pulcherrimus*, *A. Nigerinus*. *A. Pulcherrimus* is distinguished from *Nigerinus* by the fact that the tips of the hind legs in the former are white, while in the latter they are black.

There are seven *Anopheles* with three light bands on the palpi. These may be divided into two classes, those with the tips of the palpi black and those with the tips of the palpi white.

I only know of one *Anopheles* in India with a black tip to the palpi, viz., *A. Turkhudi*.

There are thus six *Anopheles* with three light bands and the tips of the palpi white.

These may be divided into three classes—

1 Those with white tips to the hind legs. Two belong to this class, *A. Theobaldi* and *A. Jamesii*.

A. Theobaldi has only $2\frac{1}{4}$ tarsal segments white in the hind legs, while *A. Jamesii* have $3\frac{1}{4}$ white tarsal segments in hind legs. There are, of course, many other distinguishing features, but these are the most readily ascertained.

2 Those with bands on the tarsal joints. There are two in this class—*A. Rossi* and *A. Stephensi*.

A. Rossi has only one large white band on the palpi.

A. Stephensi has two large white bands and one small band on the palpi. There are also additional white dorsal scales on the palpi. The tibia and femora in *Stephensi* are speckled, while they are not in *Rossi*.

3 Those with the legs entirely black. Two belong to this class—*A. Culicifacies* and *A. Listoni*.

The third longitudinal vein in *Culicifacies* is black. It is white in *Listoni*. There are only two light-scaled interruptions on the wing fringe in *Culicifacies*, there are many in *Listoni*. There is also an additional costal white spot in *Culicifacies*. The distal extremities of the tibiae in *Culicifacies* are enlarged and have some yellow scales. They are quite black in *Listoni*.

CLASSIFICATION OF ANOPHELES OF INDIA.

- A Palpi unbanded.
 - I—*A. Lindesani*
 - Tarsi unbanded
 - II—*A. Barbirostris*
 - Tarsi banded
- B Palpi banded
 - (a) Palpi with four bands.
 - I—*A. Pulcherrimus*.
 - Tips of hind legs white

II—*A. Nigerrunus*

- Tips of hind legs black
- (b) Palpi with three bands
- (c) Tips of palpi black

I—*A. Turkhudi*

- (a) Tips of palpi white

I—Tips of hind legs white

- 1 *A. Theobaldi*
 - $2\frac{1}{4}$ hind tarsal segments white
 - Tibia and femora speckled
- 2 *A. Jamesii*
 - $3\frac{1}{4}$ hind tarsal segments white

II—Tarsal joints banded

- 1 *A. Stephensi*
 - Two equal large white bands on palpi
 - One small band
 - Tibia and femora speckled
- 2 *A. Rossi*
 - Single large white band on palpi
 - Two small bands
 - Tibia and femora unspeckled

III—Legs unbanded

- 1 *A. Culicifacies*
 - Only two light spots on wing fringe.
 - Third longitudinal entirely black
 - Five light spots on costa
- 2 *A. Listoni*
 - Many light interruptions on wing fringe
 - Third longitudinal mostly white
 - Four light spots on costa

A PECULIAR CASE OF MALIGNANT TERTIAN FEVER

By G. C. CHATTERJEE,

Assistant to Bacteriologist, Medical College, Calcutta

PATIENT named Rakhai, Hindoo male, aged 40, suffered from a slight attack of fever of tertian type for three days, during which time he went on with his duties as station master of a railway station, and during which time he took no medicine. On the 5th day (day of fever) instead of getting fever he started vomiting and passing bloody stools. I saw him at 8 P.M., four hours after the attack. His condition at that time was as follows—Extremities cold, pulse 140, soft and collapsing, first sound of the heart indistinguishable from the second sound. Patient very restless and thirsty. Tongue dry, bed-clothes bathed in perspiration, he complained of a slight pain in the abdomen. Every minute he was passing pure bright-red blood. There was no mucus in the stool, urine was pale, temperature 96° F. I gave him some brandy and a rectal injection of pure hazelnu, and left him, feeling certain that he would die in the course of the night.

I was agreeably surprised next morning to learn that purging and vomiting had ceased during the course of the night, and that he was feeling better. The whole of next day passed without any rise of temperature or any other symptoms.

On the next day he got, about the same time as on the 5th day, a similar attack of vomiting

and purging with signs of collapse. This time I could not feel his pulse at the wrist-joint nor in the arm. Heart sounds feeble and heart-beats were 160 per minute, I felt almost certain that nothing could save him this time. Again I was wrong in my surmise for the next morning I found the patient nearly well except that he was a little weak.

As the attacks of vomiting and purging were periodical, I examined his blood and found parasites described below. The next morning I gave him 30 grs of quinine. The whole day passed off without any symptoms, and he is, up to now, enjoying good health.

The parasites found in this case are about $\frac{1}{16}$ th the size of a red corpuscle. When stained by Romanowsky's method, they show the following characters. A portion of the parasite is stained bright red, looking like a nucleus. It is very often situated at the periphery of the parasite. In a few they are in the centre. The rest of the parasite consists of a thin delicate ring of protoplasm which is stained blue in contrast to the corpuscle which is stained pinkish-blue. The portion between the ring and the nucleus has taken the stain of the corpuscle. The portion of the ring away from the nucleus is thicker than the rest of the ring and contains some coarse granules. In none of the parasites there is any pigment granule. The parasite is situated a little to one side of the centre of the corpuscle, in none in the centre, in a few it is situated at the periphery of the corpuscle, the nucleus projecting beyond the rim of the corpuscle. The ring is oval in shape in most cases, sometimes it is circular, in a few it is elongated.

Considering the blood was examined during the off-day it is strange not to find any pigment granules. The parasite resembles in many respects those described by Drs Christophers and Stephens in their report on the malarial and black-water fever of British Central Africa to the Malarial Committee of the Royal Society (10th December 1899). They found these unpigmented parasites in æstivo-autumnal fevers. I have seen two other cases in which parasites of a similar nature were found, but the fever was of æstivo-autumnal type. The present case is therefore peculiar in more than one point, and I do not know whether there is on record a similar case.

THE TREATMENT OF TYPHOID FEVER BY THE WOODBRIDGE METHOD IN INDIA

By A G HENDLEY,

MAJOR, I M S,

Civil Surgeon, Howangabad, O P

THE fact that I have been unable to find, in back numbers of the *Indian Medical Gazette*, any recorded results of treatment of typhoid

fever by this method, and that none of my medical friends could give me personal experience of it, must be my excuse for venturing, on the very insufficient basis of three cases, to submit this paper.

Dr Woodbridge claimed, and American literature would appear to bear him out, that the treatment, "if commenced early enough, will abort, shorten and greatly modify cases, that there is no tendency to relapse, no unfavourable complications, and that the bad effect of prolonged stimulation is done away with" very material advantages if true.

In support of this he quotes a record (up to June 1897) "of 7,857 cases of typhoid fever treated with 150 deaths, a case mortality of 1.90 per cent, and an average duration of illness in 4,935 cases, in which the duration of illness was given of 127 days."

The necessary drugs, made up in tablet-form and labelled, with formulæ, 1, 2 and 3, by Parke, Davis & Co, are obtainable, with full directions for administration, etc, from Mr Norman S. Rudolf (P, D & Co's Agent), Simla. Briefly, the treatment is a general or intestinal antiseptic and eliminant one, and consists in giving very frequently ("every 15 minutes during wakeful portion of first 48 hours") small doses of varying formulæ of podophyllum resin and calomel combined with such antiseptics as guaiacol carbonate, menthol, eucalyptol and thymol, the indications being to produce free evacuations as early as possible and by subsequently varying doses to keep the bowels regular.

Ptyalism is avoided by discontinuing treatment on fourth or fifth day for one or two days, during which interval diachm doses of saturated chlorate of potash solution are given every three hours. This is the whole treatment, and in my three cases it was not supplemented in any way whatever.

I may here mention that, supposing the maximum number of doses, 96 in 24 hours, could be given, i.e., if the patient did not sleep at all, six grains each of calomel, guaiacol carbonate and menthol with $\frac{1}{16}$ gr podophyllum resin would be taken the first day, double this quantity the second day, and if five or six free evacuations are not obtained during or soon after the second 24 hours of treatment to possibly double this until free evacuations are obtained.

As a matter of fact, nurses and patients being human, I never succeeded in getting down more than 70 doses in any one 24 hours. My three cases were all European ladies aged 39, 34, and 26 respectively, attacked between 8th September and 8th November 1901.

Case No 1—Treatment was not commenced till too late, the ninth day.

* [See Editorial on the subject, *Indian Medical Gazette*, November 1897—Ed., *I M G.*]

The patient was then semi-conscious and rapidly falling into a typhoid state

The temperature had been between 103°F and 104.4° for the two preceding days

Within 48 hours the temperature showed a marked downward tendency—touching 101.6° on tenth day, 101.4° on eleventh day, and only once subsequently rising over 102° 6

The improvement in the patient's general condition was marked. Consciousness became normal, deafness diminished, and she became cheerful and happy

The duration of this case was not shortened, the temperature not reaching normal till the 33rd day, but I certainly think the Woodbridge treatment modified the initial severity. Recovery was final. No relapses occurred. There were no complications or sequelæ

Case No 2 was an extremely delicate lady, with some degree of spinal curvature and a history of peritonitis and "inflammation of the bowels" some eight years previously

Treatment was commenced on eighth day, but owing, unfortunately, to the supply of tablets failing, I could not administer them as freely as I wished during the first 24 hours, and half-way through the second 24 hours treatment had temporarily to be altogether stopped

On 11th evening with a fresh supply of tablets, treatment was resumed

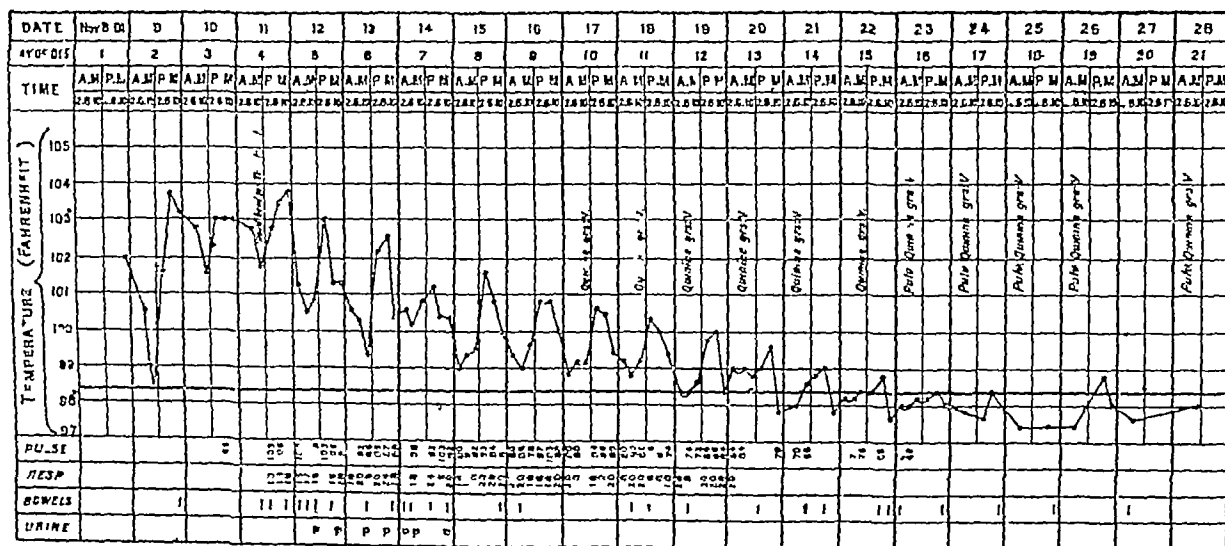
This patient had great abdominal tenderness and distension up to 15th night, when one motion followed by four on 16th morning relieved her. On 17th there was blood in stools, and on 19th day a moderate hæmorrhage and on 20th day a slight one. Recovery was complete and final. There were no relapses or sequelæ

Case No 3 I was fully prepared for, as regards drugs and experience of results to be aimed at. Treatment was commenced on 4th day. Seventy doses being given the first 24 hours and fifty odd double doses the second 24 hours

Seven very free stools resulted in this period, the patient having been previously constipated. Up to commencement of treatment on 4th morning, the daily maximum temperature had been 102°, 103.8°, and 103.0° and on the evening of first day of treatment, 103° 8

Subsequent days maximum temperatures were 103°, 102.8°, 101.4°, 101.6°, 100.8°, 100.6°, 100.4°, 100°, 99.6°, 99°, and these later three days had normal morning temperatures. The temperature touched normal on the 12th day and never rose above normal after the 15th day. I attach the chart of this case in original, as it was recorded by the nurse, it being, I imagine, a typical example of what Dr Woodbridge claims will happen, if his treatment is commenced early enough and given freely enough

One swallow does not make a summer, and three



The bowels were very constipated, and on 13th enemata had to be given

On 14th day I doubled the doses and continued on to 15th day, and on 16th after four free motions the temperature, hitherto between 101° and 103.4°, fell to 99.4°

It rose on 17th night to 101.8° and on 18th, 19th and 20th to 101° or nearly, in evenings, but after 23rd day no rise above normal occurred

cases are insufficient data to form definite conclusions on, still my experience of the Woodbridge treatment are sufficiently favourable to induce me to give it a further trial when opportunity offers. If this paper induces other medical officers with larger opportunities of treating typhoid than myself, to give the method a trial and to report results, it will not have been written in vain

THE IODINE TERCHLORIDE TREATMENT OF PLAGUE

By T K GAJJAR, M A., B Sc,
Bombay

As there have been inquiries from several quarters as regards the results of the treatment

of plague with Liquor Iodine Terchloride, I enclose herewith a tabular statement giving the statistics of plague cases treated with it by different medical men at different places, which may be of interest to the readers of the *Indian Medical Gazette*

Statement of Plague cases treated with Iodine Terchloride

Name of Place	Period	By whom treated, observed or reported	Where treated	Total No of cases	Results unknown	Recovered	Deaths	Percent of recoveries	Per cent of deaths	Remarks.
Bombay	1901 February	Dr K N Gokhle, L M & S	Free Stations of Sheth Naranjee Dwarikdas Gungoon Station	41		23	18	56.01	43.99	
	March	" R B Sunnawala	Pydhoni Station	23		9	14	39.1	60.9	
		" K N Gokhle, L M & S	Girgaon Station	110		58	52	52.7	47.3	
		" R B Sunnawala	Pydhoni Station	47		26	23	53.06	46.91	
	April	" K N Gokhle, L M & S	Girgaon Station	63		47	16	74.6	25.4	
		" R B Sunnawala	Pydhoni Station	18		13	5	72.2	27.8	
	January	" N H Choksey, L M & S, Special Assistant Health Officer, Bombay Municipality	Arthur Road Hospital	6		3	3	50	50	
	February	Ditto ditto	Ditto ditto	39		16	23	41.02	58.98	
	March	Ditto ditto	Ditto ditto	21		5	16	23.8	76.2	
	April	Ditto ditto	Ditto ditto	35		13	22	37.14	62.86	
	May	Ditto ditto	Ditto ditto	7			7		100	
	February & March	Mr P J Desmetia	Hindu Fever Hospital	151		41	110	27.15	72.85	
Poona City		Dr N M Paranjape, L M & S	Seth Naranjee Dwarikadas Free Dispensary	610	128	282	230			
Bombay	April	" L B Dhargalkar, L M & S	Mahratha Hospital	6			6		100	
	January & February	" P H Dadi Burjor, L M & S	Mahim Plague Hospital	7			7		100	
		" Sorab Nauman, L M & S, L.R.O.P.	Municipal F & G Ward	34		6	28	17.64	82.36	
		Sir Dr Bhalechandra Krishna, M.T., L.M.	Parsi Fever Hospital	2			2		100	
	February	Dr E C Tukina, L M & S	Private practice	22	2	12	8	60	40	
		" Ditto ditto	Ditto	11	3	4	4	50	50	
		" K N Gokhle, L M & S	Ditto	8	2	2	4	33.33	66.67	
		" P J Desouza, L M & S	Ditto	31		20	11	64.45	35.55	
		" H J Appoo, L M & S	Ditto	10	3	5	8	38.46	61.54	
		The Senior Surgeon and Sanitary Inspector	Ditto	2		2		100		
Mysore			Mysore State Hospital	23		11	12	47.82	52.18	
Bandora		Dr V Dias, L M & S	Private practice	21		12	9	57.14	42.86	
Alibagh		" P A. Cordeiro, L M & S, Assistant Surgeon, Civil Hospital	Alibag Civil Hospital	12		7	5	58.33	41.67	
Coorla	March, April & May	" K V Patel, L M & S, Assistant Surgeon, Coorla	Coorla M H Dispensary	10		5	5	50	50	
Tarapore	March	Mr M T Satho, H A	Tarapore Government Dispensary	10		4	6	40	60	
Poona		Dr R M Mahajan, L M & S	Private practice	4		2	2	50	50	
Kalyan		" K H Modak, L M & S	Ditto	10		6	4	60	40	
Naosari		" P M Mohita, L M & S	Ditto	7		4	3	57.14	42.86	
GRAND TOTAL				1,439	138	638	663	49.03	50.96	

[The above figures are given on the authority of Prof Gajjar —ED, I M G]

AN INTERESTING CASE OF ACUTE PNEUMONIA.

By T H SYMONS,
CAPT., I M S.

M. R., a gunporter, was admitted into hospital on the morning of the 31st May complain-

ing of 'fever,' headache and cough. That night his temperature rose to 105°F, and all his symptoms became aggravated. When I saw him in the morning of the 1st, his temperature was 105°F, pulse full, bounding 110, respirations 26, face flushed, and patient was, obviously, very

ill. He had had a normal motion that morning, and the urine was said to be scanty and very dark in colour. The chest symptoms, cough and pain were very troublesome, and the patient had had a bad night in consequence. I carefully examined the chest and abdomen and, beyond an increased frequency of heart beats and respirations, found nothing to attract attention. However, as pneumonia was suspected, either deep-seated or not yet manifest, expectorant treatment was adopted. The following morning the patient was much the same, but the Hospital Assistant stated that he had been very restless during the night, and on two or three occasions tried to get out of bed. The pulse was 132 of fair quality. Respirations 37. Vomiting had occurred during the night when a round worm was voided*. Examination of the chest shewed the left apex absolutely solid down to the second rib in front and the spinous process of the scapula behind. His cough was very troublesome, and as it only tended to wear the patient out and was always with a negative result, Tinct. camph. co. 3i in aqua 5i was ordered to be given at once and to be repeated at night. He was given, as well, ordinary diaphoretic mixture 5i every four hours and a sleeping draught of bromide and chloral at night, to which 4 minims of Tinct. digitalis was added. As the disease advanced, so the nervous symptoms became more and more pronounced, accompanied with all the signs of cardiac failure. Weak first sound, rapid, feeble ill-sustained pulse, diminution of urine, etc. He assumed the typhoid position, *z. c.*, gradually sank further down into the bed, low muttering delirium came on, tongue became dry, face wore an anxious expression, he passed his motions under him and looked generally very ill. The diaphoretic mixture was stopped and a stimulant mixture with Tinct. digitalis given every four hours, Strichnine in 3 hypodermically three times a day, and brandy increased to 5iv. He remained in this state for four days. On the night of the 6th it was found necessary to give him a hypodermic of morphia, he was so delirious and restless. During the 7th June he rallied, and the morning of 8th found him an absolutely different person. Temperature just over 100°F, tongue moist, pulse 120 (it was 150 the day before), patient was lying much higher up in the bed, which his sick attendant assured me he had assumed on his own account, and the patient himself said he felt so much better.

The lungs were examined on the 6th when the consolidation was very evident, but on examination in the morning of the 8th it had practically all disappeared, leaving no trace behind, such as *redux crepitation* or a cough. During the illness, after the administration of the

Tinct. camph. co. he had practically no cough and absolutely no expectoration whatsoever. At the time of writing, ten days after the lungs became normal, patient is rather weak, pulse 72, respiration 18, absolutely no sign in chest, respiratory murmur perfectly normal.

On analysis of the perhaps somewhat tedious detail given above, I think it will strike one that there are certain symptoms and physical signs which, either by their absence or presence, are worth noting. They are—

1st—Complete absence of cough after the Tinct. camph. co. was administered on the fourth day of the disease—the same day, however, as the pneumonic lesion was first discovered.

2nd—Complete absence of expectoration throughout the illness.

3rd—Early supervention of nervous symptoms.

4th—Sudden and complete disappearance of physical signs connected with the local lesion.

5th—The rapid and complete way in which recovery took place.

In trying to explain the above interesting points we must first think of the probable pathological and bacteriological changes which take place in the lung when it becomes invaded with the pneumococcus or whatever micro-organism is at work. As soon as the micro-organism settles down in any part of the lung it at once, either by its mere pressure or by the noxious products it gives off, concomitant with its growth and activity, brings about a local phagocytosis, and, usually as a consequence of its virulent nature, all the blood vessels become full and distended with corpuscles of both varieties, and rupture into the air cavities, and converts, what was at the time of the invasion, a sponge-like tissue into a solid sanguineous mass. Now, whatever be the principal offender, the pneumococcus or its products, it will be obvious that the more complete the defensive arrangements of nature as shown by the local phagocytosis the less likelihood will there be of the deleterious matter getting diffused into the general system, and, consequently, we would think the better the prognosis. If, on the other hand, local reaction, —for that's what it amounts to—be not complete, then diffusion will take place, and we shall have lesions of the various other systems of the body, particularly the nervous system. If local reaction be vigorous, we ought to have local symptoms well to the fore, such as cough, pain, and plenty of consolidation in proportion to the general severity of the lesion as evidenced by pulse and temperature. If, however, local reaction be below par, then the local symptoms will be absent or faintly marked, but symptoms of a general invasion will be altogether severe and appear, most probably, early in the case. If this process of reasoning be correct, the points of interest in this case are fairly easy of explanation. It will be seen that expectoration was altogether absent

* *N.B.*—Most Gurkhas suffer from worms (*Ascaris Lumbricoides*) at this time of the year—commencement of the rains.

throughout the illness, shewing that the lung had not much surplus matter to get rid of. Nothing more than could be managed by the blood vessels and lymphatic system, and eventually voided by the other systems. Secondly, after the first few days there was practically no cough, pain was never bad, and the consolidation that did take place disappeared, as if by magic, the very day his temperature came down, leaving no sign of its late presence such as a cough or redness crepitation, local reaction slight and insufficient. The general symptoms, on the contrary, were very severe and appeared, as noted above, very early in the history of the case, shewing that the system was involved very early by the micro-organism or its toxin, and if the system be involved very early, local attempt at confining the enemy must have been very feeble from the first.

The general symptoms were principally of a nervous order, insomnia, restlessness, low muttering delirium and passing of urine and feces unconsciously in the bed, together with that condition which has been called the typhoid position which is simply indicative of great nervous prostration.

The natural deduction from the above process of reasoning is that the more marked the local lesion and the later the nervous symptoms show themselves the better the prognosis.

The writing up of this case reminds me of an interesting case of pneumonia which I saw a few years ago. The man had an ordinary attack of pneumonia, right lung absolutely consolidated, and then, just when crisis should have taken place, the physical signs in the lungs disappeared in 36 hours. Nervous symptoms, delirium tremens, passing stools unconsciously, developed, and he succumbed in 48 hours. A *post mortem* was not obtainable. This case looks as if the poison broke out from its confined place in the lungs, invaded the general system, and quickly brought about nervous prostration with dissolution.

A Million of Hospital Practice.

AMPUTATION OF THE UPPER EXTREMITY ALONG WITH THE SCAPULA AND CLAVICLE (INTERSCAPULO THORACIC) FOR SARCOMA

BY J. MAITLAND, M.D.,

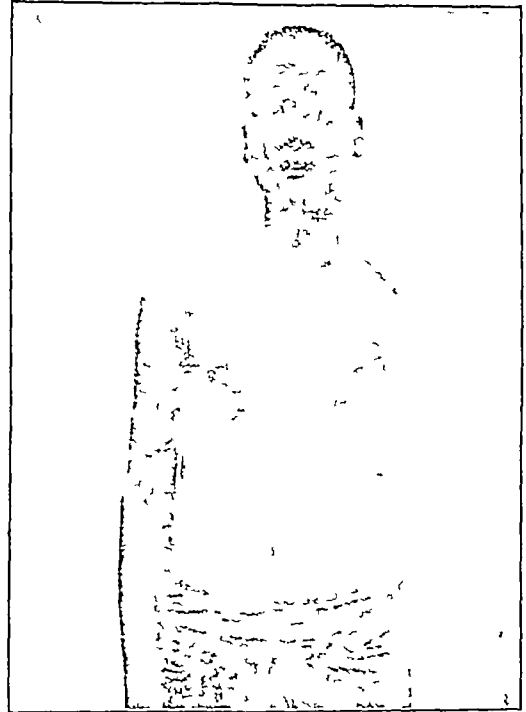
LIEUT. COLONEL, I.M.S.,

General Hospital, Madras

ARIMOOTHOO, a Hindoo boy aged 19 years, was admitted into hospital on the 21st July 1901, suffering from a tumour of the left scapula.

History—The tumour was of a year's growth. There had been pain, at first comparatively slight, but latterly more acute. Of late movements of the arm had become limited on account of pain. A month before admission the surface of the growth had commenced to ulcerate and bleed, and the patient's health had deteriorated.

Condition on admission—The patient was thin and extremely anæmic. Occupying the greater part of the posterior surface of the left scapula was a flattened growth with ill-defined borders, and ulcerating surface. The consistence



was hard and the base firmly incorporated with the bone beneath. The disease extended over the point of the shoulder and implicated the outer third of the clavicle. There was pain of a throbbing character, aggravated by movements of the arm. A small portion of the growth was removed for microscopical examination and found to be a small spindle-celled sarcoma.

Operation—31st August. An incision was made along the line of the clavicle, the bone cleared and sawn through at its centre, and the inner half removed. The sub-clavian artery was next exposed and ligatured, as also the transversalis coli. The suprascapular artery was not identified, but was presumably ligatured along with a large vein which was tied during the search for the sub-clavian artery. An incision was now carried round the whole growth, marking out an area which corresponded roughly with that of the scapula and the outer half of the clavicle. The muscular attachments of the scapula, clavicle, and humerus were then rapidly divided, and the removal of the limb thus completed. The hæmorrhage was trifling in amount,

the blood coming almost entirely from some large veins at the posterior border of the tumour. Only a very small portion of the anterior part of the wound could be covered with skin, the remaining portion being left to granulate and to be subsequently grafted. The operation was accompanied by comparatively little shock, from which the patient quickly rallied. Five days later some suppuration took place in the anterior part of the wound causing fever for a few days.

The operation of skin grafting was delayed until the twenty-sixth day owing to the necessity of rendering the surface of the wound thoroughly antiseptic. The area to be grafted was of considerable size measuring about seven inches by six. A few of the grafts at the edges of the wound failed, but satisfactory union took place over the greater part of the surface. The patient was discharged from hospital 67 days after operation being then in excellent health.

Remarks by Lt-Col. Matland—In the great majority of instances in which this operation has been performed on account of malignant disease, the humerus, as well as the scapula, has been implicated, and, under such circumstances, there could be no question as to the propriety of removing the entire upper extremity. In the case now reported the humerus was entirely free from disease, and hence, there was at first some hesitation in advising such an extensive mutilation as the removal of the whole limb. Further consideration of all the circumstances connected with the case led those who saw the patient to the opinion that removal of the entire limb was the best treatment to pursue. In the first place the implication of the clavicle rendered it imperative to remove the whole of that bone as well as the scapula, an operation which would involve complete loss of power in the upper arm. Whether the forearm and hand would be of much use to the patient under such circumstances is extremely doubtful. The probabilities are that they would be more of an encumbrance than anything else.

On the other hand, it has to be borne in mind that had it been thought advisable to preserve the limb, it would not have been permissible to ligature the subclavian artery. The transversalis colli and suprascapular arteries being necessarily divided, ligature of the sub-clavian would cut off the entire blood supply of the limb. The only alternative therefore would have been to remove the scapula and clavicle without previous ligature of the sub-clavian.

Under the circumstances this would have been a much more hazardous operation than removal of the entire limb in the manner described in the notes of this case.

A consideration of these various circumstances led me to the conclusion that it would not be justifiable to subject the patient to the increased risk involved in attempting to preserve a

limb that would probably have proved not only useless, but a serious encumbrance.

This operation, as usually performed, is not a true interscapulo-thoracic amputation.

In all the recorded cases of which I have seen an account, the inner third of the clavicle has been retained in accordance with the recommendation of Berger, who first described the operation. In cases of sarcoma in which the clavicle itself has become involved in the disease, it is imperative that the whole bone should be removed. Whether any advantage is gained by retaining the inner end of the bone is doubtful; at any rate there can be none of such importance as to justify the surgeon in subjecting the patient to the risk of recurrence of disease in the proximal portion of the bone. Judging from the case under report the patient did not suffer any disadvantage from the removal of the inner end of the clavicle.

There is one point in this operation the importance of which does not appear to have been sufficiently emphasised, and that is the advantage of ligaturing the transverse cervical and suprascapular arteries, as well as the subclavian, at the commencement of the operation. If this procedure is carried out, the rest of the operation becomes a practically bloodless one.

In the descriptions of the operation in the standard works on operative surgery no mention is made of this important detail.

LIGATURE OF VAS DEFERENS FOR ENLARGED PROSTATE

By FERDINAND DIN MOHROOF,

Assistant-Surgeon, Gujranwala

THE following six operations for prostatic enlargements were performed by me in the Civil Hospital, Gujranwala.

The patients were operated on as they were admitted into the hospital, therefore, they were not selected cases. Their health on admission was low from the constant absorption from the bladder mucous membranes of urinary solids and liquids decomposed and not decomposed. The troubles were old, for instance, of eight, fourteen and sixteen years' standing. It can therefore be imagined what effect these repeated retentions should have had on a constitution which is already crumbling under old age. To look at, the patients were in a painful state and had a miserable physique.

The patient was admitted and was put on medical treatment for about eight days. On admission the bladder was relieved and washed thrice regularly with a warm boracic lotion of 5 gr to the ounce strength. This was done with a clean aseptic catheter which was constantly soaked in 1 in 10 carbolic acid lotion.

My belief is that enlargements of the prostate are due to the chronic irritation of rectum from

chronic constipation, therefore the salines were given regularly and diet was changed to milk only when the irritation is subsided a dose of castor oil being given a night previous and an enema in the morning, the colon is thoroughly washed and cleared of its contents. The patient is then brought to the operating table. The operation area is shaved, washed with soap and water, cleaned with turpentine and asepticised with carbolic acid lotion (one in twenty strength), a piece of antiseptic gauze is spread on the operation with a hole in it corresponding to the operation area.

gut continuous suture. A gauze drain is kept at the lower angle of the wound, and the skin wound is brought together by silver wire sutures. Dressing applied and patient removed to his bed.

Catheterisation is continued for about eight or ten days as before and bladder washed as before, first dressing is done on fifth day and stitches are removed on the seventh day, by this time the wound is invariably healed.

The following table shows the name, age, time for which patients were troubled with retention, date of operation, etc.—

	1	2	3	4	5	6
Name of patients	Khuda Bux	Dad	Rahmat	Cahurshah	Mulla	Nabi Bux
Age in years	75	65	64	75	57	74
Trouble lasted since	4 yrs	8 yrs	5 yrs	16 yrs.	1 yr	14 yrs
Date of operation	11 5 01	21 6 01	9 7 01	14 9 01	23-10 01	13 11 01
Urine passed without catheter	3rd day	11th day	8th day	10th day	5th day	13th day

Operation—Three of the following cases were done on the right side of the patient and three on the left.

The cord is felt in the inguinal region as it leaves the external abdominal ring, its site is determined, an assistant is told to pull up the skin and sub-cutaneous tissue in his two hands. The knife is pushed through (as in hernia incision) and is cut from below upward, the cutting edge looks upward.

Thus we get an incision about 2½" long. Two small arterial vessels generally spout, they are twisted with Spencer Well's forceps, a vein lies across the wound, this is completely divided and its each end twisted. When bleeding has stopped, further dissection is proceeded with dissecting forceps till the areolar sheath of the cord is exposed. A small cut is made in it by first holding it up, and then the structures of the cord are examined and individualised.

The feel of the vas deferens is very hard. It has a whitish marble appearance, it is surrounded by an areolar sheath and two or three very fine arterial vessels, it is situated centrally and posteriorly. It thus separated, and cleaned for about an inch. Two catgut ligatures are passed around it, and each one is tied at a distance of about ¾ of an inch. It is noticed that the patient always gives evidence of pain when the proximal ligature is applied and pulse misses a beat, but this is not the case when distal ligature is applied. The cremasteric contracts and testicle comes to lie near the lower angle of the wound. The vas deferens coils on itself. The testicle is pulled down, the structures are put in their respective places.

The sheath of the cord is sutured with a cat-

I think the above operation is far more hopeful than other operations done to reduce the size of the prostate. The subsequent health of my patient has been good. All of them gained in weight. The cultivators began to till the ground and ceased to be a trouble to themselves and to their relatives. There is no doubt that they lose their procreative power, but this is an age when the sexual apparatus has nearly finished its destiny and is no more needed for the continuance of the race. If this argument is taken against the operation, the other vas deferens can do the work still. I have also noticed in these cases that as man becomes mature his vas deferens becomes thinner and thinner.

A CASE OF GANGRENE OF THE PENIS DUE TO GONORRHOEA.

By C. C. MURISON,

LIEUT. I. M. S.

SERGEANT H. S., 9th Bombay Infantry, age about 47, came to hospital on 8th November 1901, complaining of pain in the scrotum.

Previous history—From his medical history sheet it appears that he has had no illness to speak of.

Present illness—Patient stated that on the 2nd November 1901 (six days previous) he had had connection with a woman, and on the 6th (four days later) he developed gonorrhoea, which became worse very rapidly. The pain in his scrotum began on the morning of the 7th (yesterday).

On examination—I found that he was suffering from gonorrhoea very badly, and that his scrotum was swollen and red, on further examin-

ation I observed that the swelling of the scrotum was due to an orchitis of the left testicle. The patient seemed to be in great pain and had great difficulty in walking. His other organs were healthy.

Treatment—On admission he was given a purge of Calomel gr iv and Pulv Jalap co gr 40. The scrotum was painted with iodine. An alkaline mixture containing Pot Bicaib gr xx, Tinct Hyoscyamus m x, Aq ad 5i was ordered to be given every four hours.

Progress of the case—The next day the patient stated that he was better. The scalding and the pain in the scrotum were less. The discharge from the urethra was about the same.

10th November (3rd day)—Pain in scrotum nearly gone. Discharge from urethra less, penis somewhat swollen, but had no pain except the irritation in the urethra and the scalding in urinating.

11th November (4th day)—This morning I was greatly surprised to find that he had developed gangrene of the whole of his fore skin and the dorsum of his penis except about an inch near the base. The gangrene of the dorsum involved the whole of the skin and part of the muscle. The part affected by the gangrene was quite cold, painless and had no sensation of any kind. The skin was of a blackish brown colour with patches of green. There were blebs in some places, and the cuticle was separated in others, leaving the dermis very moist. The part had a very emphysematous feel, and the smell was unbearable. There was no demarcation line between the dead and the living tissue. The temperature was 99.2°F, and his pulse was 104 and weak. Heart beating somewhat feebly. Tongue dry and furred. Under my supervision I got the Hospital Assistant (2nd Grade H A Ram Rao Gangadhar) to circumcise the patient and to remove all the gangrenous parts from the dorsum of the penis that was possible. This caused the penis to be quite flat on the dorsum except the unaffected part near the base. Powdered iodoform was then dusted on and a carbolic poultice applied. Orders were given to change the dressing every four hours. I had his bed sprinkled with eucalyptus oil to prevent the smell. I also ordered him 3 ss of brandy every four hours. The alkaline mixture was continued. He was placed on milk diet.

12th November (5th day)—Patient was much better this morning. Nearly all the gangrenous parts have come away except a little bit over the dorsum of the penis near the base. This gangrenous bit extended underneath the skin and which was quite healthy. This gangrenous part was removed with a pair of forceps. His heart and pulse have greatly improved, temperature 99.22°F, appetite improving. The scalding still continued.

13th November (6th day)—Patient feels much better. Penis looks very healthy and granulations

appearing in places. Scalding much about the same. Alkaline mixture stopped and copaiba ordered as follows—Oleum Copaibæ m x, Hyoscyamus m x, Liq Potassæ m x, Aq Menth Pip ad 5i.

20th November (13th day)—Patient greatly improved. Penis healing rapidly. No discharge from penis. Putting on weight. Copaiba mixture stopped. Put on nourishing diet and tonics.

18th December (41st day)—Patient has gradually improved since 20th November 1901. Discharged from hospital to-day cured.

Remarks—On first seeing the gangrene I thought it was due to extravasation of urine, but on removing the gangrenous tissue no sinus could be found through which the urine could have extravasated.

The dorsum of the penis along with the fore-skin being affected is also very noteworthy. The cause of the gangrene was most probably inflammation from the gonorrhœa.

ABDOMINAL WOUND WITH PROTRUSION OF THE GUT

BY TARANATH DEB,

Assistant Surgeon, Calcutta

TARINI, a fishmonger boy aged about ten, was admitted at about 9 P.M., on 13th May, 1901, into the Madaripur hospital. The father of the boy related that the boy had a fall from a tree and thus 'cut his belly' on the morning of the 13th. On examination I found a semilunar wound measuring about 8 inches in the right inguinal region. The wound was directed obliquely and was about 1½ inches broad. The peritoneum was less extensively wounded (wound 1¼" only) but through it about 1½ cubits of the small intestines with mesentery had protruded out. The gut was reddened and slightly swollen, covered with lymph and bearing impression of the cloth which was used as a bandage by his friends and which had become almost glued to the intestines. Since the receipt of the injury the boy had vomited three or four times. The pulse was fair, the child quite conscious, and did not seem to be suffering much pain. Tongue, slightly dirty but moist.

Under chloroform the intestines were washed with warm boric lotion and carefully put back into the abdominal cavity. There were a few small splinters of wood found in the superficial wound, which were carefully removed, and the wound washed clean with warm boric lotion. The peritoneum was sutured with aseptic catgut and skin with horse-hair, thoroughly dusted with iodoform and dressed. Opium, salol and quinine were given, and the boy placed under liquid diet.

14th May, 1901—Temp 100.1°F. Had passed urine at night, can and does extend legs

In the evening he had shivering and fever Temp 104.5°. Became delirious (violent and almost unmanageable) Dressings all night Cold application to the head was given and phenacetin with caffeine citrate—one dose given at once

15th May, 1901—Temp 99.4° Had delirium all night, but has none now Passed a little stool Complaints of pain in the abdomen, repeat quinine, opium and salol In evening again shivering and fever (temp 104.1°) with violent active delirium Repeated phenacetin and cold to the head The father of the boy informed that during night the boy had vomited and brought up two round worms So two grains of santonine were added to phenacetin

16th May, 1901—Temp 99°, but as the pulse was very weak a little stimulant was given Had fever, but much less, and no delirium Dressings changed The horse-hair stitches had cut through, otherwise the wound was quite satisfactory Repeat all and santonine gr. ii

17th May, 1901—Had a good stool Fever slight Dressings all night Complained of pain over the stomach Salol, quinine and opium given as before Santonine gr. ii

18th May, 1901—Had several soft and watery stool last night Had slight fever in the evening Repeated all except santonine

19th May, 1901—Had several stools throughout the night All medicines were stopped, and a four-dram dose of castor oil was given at once The oil acted and cleared the bowels thoroughly A lot of dead and living round worms were expelled, and the fever fell down

Thenceforward there was no use of temperature and the case progressed favourably The wound took some time to heal, the stitches having cut through the skin until he was discharged cured on 14th June 1901 During his stay one peculiar symptom was complained of, viz, a pain referred to the stomach Salol was continued for some time

Remarks.

i The peritonitis was so slight, though the intestines had been wrapped and tied in a dirty cloth for 12 hours nearly, and exposed to the air I had a similar case of injury with protrusion of the gut before in a boy of the milkman class In that case, too, the peritonitis was so slight that the boy passed urine himself and could extend legs on the second day

ii The pain was referred to the stomach, this occurred also with the other boy alluded to This might be accidental.

iii The rigor, high temperature, delirium and diarrhoea were probably due to round worm I have on more than one occasion seen cases of diarrhoea (even in adults) baffle all our skill and then disappear under doses of santonine Of course in such cases santonine is suggested only by the failure of other drugs In this

case had it not been for the worms vomited there was nothing in the fever or delirium to offer even a remote suggestion Experience teaches that in this country one should "when puzzled over some obscure dyspeptic condition to bear Ascaris in mind" (Manson), or still better, "give little patients, as a matter of routine, a few doses of santonine"

NOTES ON A CASE OF SUBPLEURAL ABSCESS TREATED BY ECTHOL.

By K P BANNERJEE,

ASST SURGEON,
Jangipore

On the 8th April last Gopaldas, H M, 20 (student), came to the out door dispensary for treatment of a dull pain in the upper part of the right side of his chest There was no swelling, but the skin was rather glistening in appearance The infraclavicular region was dull and painful General appearance pale, but there was no fever, no cough Manipulation gave very faint sign of fluctuation He could not give any definite account of hurt or injury

A guarded trocar was thrust in as far as the rib, but nothing came out, and it was withdrawn Deep fluctuation was felt on re examination An incision about one inch long was made one and a half inch above the umbilicus, upward and outward down to the rib, but nothing came out On introducing the finger the first interspace seemed to be bulging A director was forced through the intercostal muscles and pus welled out The opening was enlarged, and the finger was introduced to ascertain the nature of the cavity After two ounces of pus had come out, the finger came in contact with a layer of smooth tissue which was supposed to be that of the lung Towards the sternal side, the finger was resisted by a margin of the cavity, but nothing could be felt towards the spinal side along the ribs On withdrawing the finger the tissue came up to the mouth of the opening as a flap which did not recede with the respiratory movements It was then examined and diagnosed to be the parietal layer of the pleura which was separated from its attachment by the formation and accumulation of pus, but which did not give way to form an empyema

About four ounces of pus was drawn out, and the cavity was drained and dusted with boriodoform

On the second day the patient got fever, but there was no cough or any sign of pleurisy The patient was treated in the usual way for about two weeks without any marked improvement The fever continued as an intermittent type, and the discharge, though less, continued to be purulent

On the 2nd May (16th day) ecthol was prescribed, both internally and externally, and in a week's time the fever subsided, discharge lessened, and the wound granulated

At this time the patient stopped attending the dispensary and taking any medicine He returned after a week The external wound was found to be almost closed, but pus had burrowed between the chest wall and the pectoral muscle The opening was again enlarged, and a drainage tube inserted and ecthol (5i t d) again prescribed The wound healed up in a week, and the patient is now in good health

Remarks—This was my second case treated by ecthol The result is promising and satisfactory

Pure subpleural abscess without empyema is a rare occurrence There must have been some hurt to cause such an abscess, though the patient could not recollect it

The discharge after the use of ecthol always becomes thin,ropy and transparent

THE
Indian Medical Gazette
 APRIL, 1902

EYESIGHT IN THE ARMY

ON March the 7th, an Army Order was issued, authorising the wearing of spectacles and eye-glasses by officers and soldiers in the Army, but the eye tests on entering the service are to remain unchanged

While acknowledging that this concession is a step in the right direction (which might with advantage have been introduced years ago), it is to be regretted that the War Office did not see its way to reconsider the whole matter of Vision Tests for the Army. The present Test-dot card (Army Form I-1220) is too well known to our readers to need description, but it is not, we believe, sufficiently recognized what standard of vision this test corresponds to

The dots are each $\frac{1}{4}$ inch in diameter, and as an object of this size subtends an angle of one minute at 57 feet (approx), it should be seen in a good light by a normal eye as a separate object at this distance. As a matter of fact it has been found, for reasons which need not be entered into here, that the dots can be accurately counted at distances varying from 80 to 90 feet by healthy eyes, examined out of doors, as the recruit is ordinarily examined in India

However, if we accept the first distance as being the maximum distance at which the dots can be counted by the healthy eye, we find that the recruit for the Army is required to count the dots at 10 feet, in other words, he must have a visual acuity equivalent to $\frac{1}{57}$ of normal, roughly speaking about $\frac{1}{60}$, for Departments, &c., the dots must be counted at 5 feet, equivalent to a visual acuity of (roughly) $\frac{1}{11}$

By the present test, we are only made aware that the soldier has at least a visual acuity of $\frac{1}{60}$, and that he can see, more or less distinctly, a bull's eye three feet in diameter at a distance of 600 yards, as to whether he is capable of seeing any farther distance, this test affords us no information

It is, to say the least, anomalous that such care should be taken in measuring height and chest to the fraction of an inch and remain satisfied with our present meagre knowledge of the visual capabilities of the recruit

If there were any difficulty in accurately determining the exact visual acuity of even the most illiterate recruit, this could be understandable, but such is not the case, by modern methods, which are as quickly and as easily managed as the Test-dot Card, the vision can be measured as correctly as the chest

While it may be necessary to retain the present standard of vision in England, owing to the scarcity of recruits, there seems to be no valid reason why the same standard should be made applicable to India, as it can hardly be said that the conditions are the same

If Commanding Officers and Recruiting Officers were aware of the low value of the present test, it is probable that the standard would be raised in a very short time, but unfortunately these officers, for the most part, think that when a man passes the prescribed test he has perfect vision, instead of having about $\frac{1}{60}$ of normal

It is to be hoped that the above quoted Order may be made not only permissive but compulsory for all men armed with rifles who do not possess full vision

The object of such a test is (writes Captain Munson, U S A.) to exclude from the service men whose visual defects are such as to prevent them becoming marksmen. "Successful use by the soldier of long range firearms demands that his vision shall be normal or so nearly normal that there need be no question of his ability to see the target at all ordinary ranges"

There is, at present, certainly no guarantee that a test which passes a man with $\frac{1}{60}$ of normal vision can fulfil this standard

THE TERM "REMITTENT" AS APPLIED TO FEVERS

THERE is, perhaps, no term used in tropical medicine which has been more prolific of harm and confusion than the word "remittent" as applied to fevers. The harm has been chiefly done in India and in the Army, where we are bound down to the rigid nomenclature prescribed by the Royal College of Physicians. We do not agree with those critics who have recently appeared out of South Africa that the use of this "Nomenclature" is altogether wrong, we believe that some such rules must exist or we should have the same diseases called by a variety of names, fanciful and otherwise, but we have for long and frequently protested against this term "remittent"

The origin of the term is this. In the "Nomenclature of Diseases" malarial diseases are divided by the Royal College into two kinds, *viz*, ague or intermittent fever and remittent fever. This is bad enough, and it compels a medical man to register cases of malarial fever either as ague or as remittent fever. Now we all know that very many cases are by no means intermittent as regards temperature, and hence could not be classed under that heading. Such cases at present must therefore be called "remittent." This is far from satisfactory as regards the malarial fevers, for many of the cases so recorded are subcontinuous or continuous and are probably very often aestivo-autumnal infections. A great step in the right direction was made when the Sanitary Commissioner with the Government of India issued orders some years ago that cases recorded as "remittent" should have short notes attached to indicate their nature or origin. But the evil attaching to this term by no means ended here. An impression got abroad (especially among practitioners of the Assistant-Surgeon and Hospital Assistant class) that any fever which lasted a certain number of days in which the temperature (taken only morning and evening) seemed on the chart to remit was "remittent" fever, and consequently a heterogeneous mass of diseases with fever as a symptom were thus labelled. It was forgotten that if "remittent fever" meant anything it meant one form of malarial fever, or from a confused knowledge of this fact it came to be assumed that because a fever was labelled "remittent" it must therefore necessarily be malarial, and a vicious circle of reasoning or rather unreason was established. The history of the differentiation of the continued fevers of India affords us several examples of this fatal error. Some fifteen or twenty years ago cerebro spinal fever broke out severely in the Central Jail at Alipore, and a committee of medical officers was appointed to study it, consisting of Drs. Crombie, D. D. Cunningham and Joubert. These able officers, on examining the records of the hospital, found a remarkable number of deaths attributed to "remittent fever," and on looking up the records of the cases and the *post-mortem* notes, it was found that the great majority of these "remittent" cases were really the fatal cerebro-spinal fever.

The same applies to typhoid fever, especially in natives. Over and over again we have seen

cases in native children where the medical practitioner in charge was quite happy and content to mumble the comfortable word "remittent," sometimes going so far as to call it "infantile remittent." This must have occurred in the private practice of most of our readers.

The same term and consequently the same confusion existed in our hospital returns. It is now pretty clearly established that typhoid fever is not uncommon among Natives, and the question is whether it has increased of recent years or is only now more frequently diagnosed. One view is that the disease has not increased, but that formerly it was very often called 'remittent,' and the fact that the records of our large hospitals show that many cases returned as remittent resembled typhoid in their clinical aspect, and many fatal ones showed clear Peyerian ulceration when examined *post mortem*, is an additional illustration of the pernicious use of this term "remittent." We, therefore, strongly support the recommendation of the recent Malaria Convention at Nagpur for the abolition of this term, and we hope that the Royal College which (after much solicitation) admitted the term "Malaria fever" will see their way to abolish the word "remittent" utterly from their nomenclature. As regards the strict use of the term "remittent" as applied to a form of malarial fever we cannot do better than quote the most recent pronouncement on the subject, from the very able and complete article on malarial disease by Ronald Ross in the new edition of Quain's "*Dictionary of Medicine*" (p. 954). He writes—

"Other circumstances which influence the fever curve are the normal modifications to which the paroxysm is subject. The most important of these is the prolongation of the paroxysm due (a) to infection by the aestivo autumnal tertian parasites, or (b) to sporulation not being simultaneous, or (c) to want of habituation in the patient. In such cases the paroxysms are apt to run into each other, a second begins before the first has ceased, and we obtain what is called a malarial remittent fever. This point should be carefully noted. A remittent fever is not fundamentally different from an intermittent fever, it is merely due to the coalescence of attacks, with absence of the usual intermission. It is apt to occur during the first days of fever due to any species of parasite but is especially liable to occur with the aestivo-autumnal parasites."

If the use of the term "remittent" could be restricted to cases as thus described by Ross, it could do little harm, but it has been misused in

such a vague and confusing way that we would gladly welcome its abolition altogether from medical nosology

LONDON LETTER

MEDICO-LEGAL

THE issue of a medico-legal number of the *Indian Medical Gazette* is an excellent idea, and ought to result in the presentation of much interesting and useful information. Among the numerous and voluminous official reports prepared in India there is none, with the exception of the reports of the chemical examiners, devoted to this highly important branch of medical practice, and these concern only a small section of the great subject of forensic medicine, and they do not obtain the publicity and circulation which they deserve. The records of reports made in police cases and the proceedings of criminal courts of justice contain data and experiences of the utmost interest and value, but they are known only to the civil surgeons, police-officers, lawyers and judges who deal with them, they remain with few exceptions in concealment buried in books and files. They serve a good purpose in relation to the investigation and trial of cases, but are not available for the teaching and guidance of those whose business it is to frame reports and offer skilled evidence and opinions. Occasionally cases of unusual interest, or which appear to the reporter to be so, are published in medical journals, but they are rare and isolated.

It is really in the law courts that the practical worth of medical jurisprudence so called is brought out. It is then that the points are raised, debated and decided, which by their weight or novelty entitle them to record and remembrance for future guidance. A large share of the utility of Cheever's great work is due to the fact that he obtained access to the archives of the criminal courts (*Nizamut Adalat*) of the North-Western Provinces, and a great deal of the best of the material contained in his and other works on medical jurisprudence has been obtained from the reports of celebrated causes. It is from this source that the best knowledge and experience may be obtained, and unfortunately in India the proceedings of criminal courts are not readily available for purposes of study and record. Inspector-General John Murray endeavoured to collect medico-legal information from all parts of the Bengal Presidency by means

of a form which all civil surgeons were required to prepare and submit, containing a brief report of all cases on which they were required to report for the information of the police, including *post-mortem* examinations. There was a column to show how the case was disposed of by the police or courts, but this was very imperfectly filled up. It was from these returns that I prepared the report which I afterwards published in book form entitled "*Medico-legal Experiences in Bengal*." The labour of tabulation and sifting was very considerable, and the result was valuable in so far as it showed the nature and outcome of medico-legal work in India. Harvey dealt with a subsequent and larger batch of these returns following closely the same method of tabulation and arrangement. The conclusions were very similar to those which had been deduced from the earlier series. Future accumulation of these records were not digested, and the return was discontinued. It is doubtful whether further compilations would have repaid the labour of analysing them, criminal as well as social habits having such a tendency to repetition in India. Mackenzie's work contained the result of his observations and experiences as police surgeon of Calcutta for many years, and among much that was trivial contained some useful information, but the great defect of all these reports was the lack of evidence as to the service which the facts rendered in the courts. It is to this aspect of the subject that I desire to draw particular attention, and I hope that your special number will display some products of digging in the rich mine of the proceedings and practice of the criminal courts of India, in which the facts constituting the body of knowledge denominated medical jurisprudence are elicited, presented, sifted, appraised, utilized and applied.

CANCER RESEARCH

A serious effort is being made by the Royal Colleges of Physicians and Surgeons to organise a systematic scheme for the discovery of the causes, prevention and treatment of cancer. The details of the most desirable project will be found in the issue of the *British Medical Journal* for the 25th of January last (p 228). The researches are to be made by competent investigators working in concert in fully equipped laboratories and in co-operation with hospitals such as the Middlesex, in which special accommo-

dation is provided for the reception of cancer cases. The project has commended itself to public approval, and if sufficient funds are forthcoming, the thing will take form and make a start without delay. Similar movements have been initiated in France, Germany and America, and the matter is engaging earnest attention throughout the civilized world. Meantime, by means of more early and radical operation, by exposure to the Roentgen rays and in the case of breast cancer by oophorectomy, endeavours are being made to obtain, if not a cure, at any rate a prolongation, of life in those afflicted with this terrible disease. Is cancer a degeneration or an infection? If the former, is it a senile change appearing prematurely in certain places or tissues more or less devitalized? or is it an accidental transplantation of epidermic and epithelial or epithelioid cells into an environment which makes for rapid growth and facilitates further invasion, continuous, proximal, focal and distal? or if parasitic, are Plummer's cancer bodies the *vera causa*, and if so, what are they? and how can their growth and spread be inhibited?

These are questions which cannot be answered at the present time, but to which a reply is most urgently desirable. There is another question regarding the geographical distribution of the disease, more especially its prevalence among dark and savage races, which is of great interest, and regarding which information is very needful. At one time there was a notion that cancer was very rare among natives of India. This has to some extent been disproved, but further and more definite knowledge is wanted as to the fact and extent of prevalence among various races in various places. This is a matter on which dispensary statistics and special observation might throw light. Official reports are silent on the subject because the classification of diseases is too vague. It would of course be necessary to distinguish sarcoma from cancer in any such investigation. There is no difficulty nowadays in making such a discrimination, and I venture to propose the inquiry as one likely to prove easy and valuable.

THE TAYLOR PRIZE

Surgeon-General Taylor has given practical evidence of his desire to promote scientific work in the service over which he presides by offering a prize of £25 for good labour in any depart-

ment of medical science. The reward is not to be given for approved service of an ordinary character, nor for mere professional merit, but for some special study or research outside of hospital duty. The bestowal of it is not to depend upon the preparation of an essay or treatise, but upon the report of the medical officer or officers under whose eye the man has worked, and whose testimony regarding the character and amount of the special work is to constitute the means of making known its nature and value. The reward is to be given annually if suitable recipients are forthcoming. The offer is an earnest of the Director-General's wish to raise the scientific tone of the R A M C and to encourage research. How it will work remains to be seen. Surgeon-General Taylor presided at the recent prize giving at Netley and delivered an excellent address which was listened to with marked attention and appreciation. It was an appeal to the higher instincts and motives which govern or ought to govern professional life. Arrangements are being made for providing educational advantages for officers entering the medical service and for those who are in the service and desire to renew and improve their knowledge. The manifestations of a mind and heart to promote scientific culture which the new Director General has given cannot fail to exercise a salutary influence on the deliberations which have for their object the organization of a great medical staff college in London.

20th February, 1902

K McL

Current Topics.

THE MUTABILITY OF BACTERIA AND THE DE NOVO ORIGIN OF TYPHOID

ONE of the most interesting chapters in the little *Hand-book of Hygiene* by Lieutenant-Colonel A. M. Davies, R A M C (reviewed in another column) is that on the question of the variableness or mutability of bacteria, a matter of the utmost importance, and one which has attracted much attention of recent years. We purpose here to give a brief synopsis of the views held by Lieutenant-Colonel Davies on this subject.

He begins by asking if the specific bacterium should always retain its constancy of character, or if it is possible that it may undergo changes in these characters dependent upon alterations in its environment, that is, may its specificity be variable? It is known that differences of size or

shape are of little value as criteria of distinction, and many apparently well-established species show great variations in these characters in different culture media. Now in the laboratory, although certain forms do undoubtedly show a great constancy of character when conditions are kept exactly the same, it is well known that very slight modifications of these conditions will produce great changes and it seems reasonable to suppose that variation of surrounding conditions may cause variation of bacterial characters.

Take the case of cholera. The spirillum described by Koch had known and fairly definite characters, but D. D. Cunningham showed that there are ten or more "species" of comma bacillus, characterised by difference of growth, &c.

Hueppe, Sanarelli, Metschnikoff and other observers have shown that "variation in the properties of a microbe can be produced artificially, and it is known that cultivations from different epidemics present different characters."

Again in diphtheria, Loeffler's bacillus is considered the pathogenic cause, but the frequent association of infectious sore throats with the beginnings of diphtheria epidemics and the progressive development of the property of infectiousness point to the likelihood of the specific bacillus acquiring its specific pathogenic properties by evolution.

Then, again, the bacillus typhi abdominalis of Eberth. Recently opinion has undergone a change as to the fixedness of the characters of this bacillus. Rodet and Roux believe that the *b. coli* is another form of the *b. typhi*, and Von Babes has shown that numerous atypical typhoid bacilli exist in the bodies of typhoid patients. Others have described various pseudo-typhoid bacilli, and recently A. C. Houston and Gordon have described races or varieties intermediate between the two typical forms, *b. typhi* and *b. coli*. Chantemesse and Vidal state distinctly their belief that the coli bacillus plays a part in the causation of typhoid fever. Loirain Smith in a typhoid outbreak in Belfast found only *b. coli*, and moreover found that some races of *b. coli* isolated from the water gave the serum reaction distinctly, and in typhoid cases he found *b. coli* in the spleen. Lieutenant-Colonel Davies concludes his account of the bacillus typhi as follows:—(1) some factor besides the typhoid bacillus is concerned in the production of typhoid fever (Chantemesse and Vidal), and (2) excremental contamination of water (as shown by presence of *b. coli*) is certainly often associated with, and in all probability the cause of, typhoid outbreaks, without special contamination by typical *b. typhi*.

As regards enteric fever it may be stated that, generally speaking, outbreaks either (a) can be traced to specific contamination of air, water or food, or (b) such specific infection cannot be traced, but neither can it be disproved nor considered unlikely. Possible contamination is

present almost everywhere, and the British soldier runs great risk as regards enteric in the bazars he frequents.

But neither of these explanations will apply in every case, and notwithstanding that the general opinion of late years has been adverse to Muchison's view of the *de novo* origin, there have always been a number of observers in India and elsewhere who have been unable to satisfy themselves that the *de novo* origin is impossible. Many examples have occurred in campaigns which appear inexplicable on any other theory, e.g., in Zululand (1879), Afghanistan (1879), Egypt (1882), up the Nile (1884-5), and in the French Expedition in Tunis (1881). In these places cases over and over again occurred where importation and contagion from pre-existing cases seemed impossible. Manson points out that in Australia typhoid has occurred in the back country in lonely spots, hundred of miles from fixed human habitations. Then, again, we have the prevalence of diarrhoea previously to and at same time as outbreaks of enteric, e.g., Mardstone, 1897, Belfast, 1898, and in the National Encampment in the United States, 1898 (see *I. M. G.*, Sept 1900, p. 361).

Lieutenant-Colonel Davies believes that "the theory of pythogenic origin or spontaneous origin *de novo* comes into line and agrees with the bacterial theory of disease production, if the idea of necessity for contagion by one specific bacillus be abandoned and the possibility of evolution of disease-producing properties through successive generations of bacilli be entertained. It is suggested that the diarrhoea prevalence so frequently associated with enteric outbreaks is dependent on, and is an expression of, this bacterial evolution."

We have above given a résumé of Lieutenant-Colonel Davies' views which are shared by several medical officers in the British and French armies.

We must, however, remember the recent investigations as to the infectiveness of the urine after typhoid fever, and that typhoid bacilli may retain their virulence for several months when present in infected fabrics carried in the blanket roll (Munson, *Military Hygiene*, p. 685). Whichever theory may be held, the paramount importance of a pure water-supply and good conservancy is equally clear and imperative, and we may add that we can find no support for this new restatement of the *de novo* origin in Cuishmann's great monograph on typhoid, just published in the English edition of Nothangel's Encyclopædia.

SNAKE VENOMS, COBRA AND DABOIA.

IN the course of a very interesting lecture delivered, by Captain George Lamb, *M.S.*, of the Bombay Research Laboratory, during the recent Malarial Convention at Nagpur, we find a pronouncement on the differences between the

effects of cobra and daboia poison which are of the utmost value in attempting to appreciate the value of Calmette's antivenomous serum. Captain Lamb points out the chemical differences in the poisons of the cobra and daboia, and his results differ in many important particulars from those of Martin, Cunningham and Calmette. He shows that the effect of cobra poison is first and mainly on the central nervous system, and secondly on the blood, breaking up the red corpuscles and setting free the hæmoglobin.

This is a quite different effect from that of Daboia poisoning, which acts mainly if not entirely, on the circulatory apparatus. This is summed up by Captain Lamb as follows —

(1) It affects the coagulability of the blood injected directly into the blood stream or in large doses under the skin it so increases this as to cause extensive intravascular clotting. In small doses it causes, after no doubt a short lived phase of increased coagulability, a marked and prolonged phase of diminished coagulability, so that in some instances I have noticed the shed blood remain absolutely unclotted even after 24 hours.

(2) It has a destructive action on the red blood cells, breaking these up and setting free the colouring matter contained in them.

(3) It has a marked destructive action on the capillary walls, rendering them more permeable to their fluid contents.

(4) It has a marked depressing action on the heart, so marked indeed as to sometimes lead to a fatal termination from this action alone.

(5) It has no action on the central nervous system, and there is therefore no paralysis ever observed.

It has always been a matter of some doubt whether Calmette's serum was of any specific value against any viperine snake. Calmette (*Allbutt's System*, Vol II, p 834) apparently claimed that his antivenomous serum was equally efficacious in cases of cobra bite and in the bite of many other snakes, but he does not specially mention the daboia. The late Dr Kanthack, however, in his review of Dr D D Cunningham's 1895 paper on snake poison, distinctly laid down that Calmette's serum "had no effect against daboia venom" (*op cit* p 838), and now Captain Lamb "has demonstrated in many experiments with different animals that it is of no avail whatever in counteracting the poisonous effects of the daboia venom."

Captain Lamb is still experimenting on other snake-poisons and we are informed that Calmette's serum has little or no effect against the venom of *Bungarus fasciatus*.

These are facts of the utmost importance. A sufficient number of cases have now been published in our columns and in those of our medical contemporaries to show the undoubted efficacy of Calmette's serum in cases of cobra bite. It is therefore of the utmost importance for the physician or surgeon, who has a case of snake bite to treat, to be able to see and identify the snake. If the reptile is recognised to be a cobra, then Calmette's serum is to be used

at once and with a free hand. Fortunately it is true that, as Martin of Melbourne has pointed out, in the majority of cases the victim does "not receive much over a minimum lethal dose", hence the recorded success of treatment by 10 c c and less of Calmette's serum, but as Lamb and Hanna have pointed out, this serum undoubtedly deteriorates in the hot weather in India, hence one phial is seldom sufficient, and if marked nervous symptoms supervene, the surgeon must not hesitate to push the serum and inject the contents of 3, 4 or even 5 phials before he gives up the case as lost, or, still better, resort to intravenous injection of not less than 30 c c.

This leads us to the question of expense. At present a phial containing only 10 c c costs in India about five rupees, hence Rs 20 or so, are necessary for successful treatment. This is not much if thereby we save a human life, but few of our rural dispensaries (where the remedy is most needed) can afford to stock sufficient quantities of serum at this high price. The remedy however is clean, and that is that India must manufacture the serum for itself. It seems absurd that India should send home snakes for the antivenomous serum to be manufactured in France and to be exported out here at fancy prices, when we have the laboratories and the expert men already among us in India.

The Bombay Research Laboratory or the Pasteur Institute at Kasauli could manufacture enough serum to supply every dispensary in India with serum if a grant was given and a medical expert appointed for this special work. Statistics published by the Government of India show over 22,000 deaths annually from snake-bite. Many of these lives could be saved were every rural dispensary in India supplied with Calmette's anti cobra serum, and this cannot be done till Indian laboratories are granted facilities to manufacture this serum on a large scale and distribute it at cost price to dispensaries all over the country.

LANOLINE V GLYCERINE VACCINE LYMPH

THE comparative values of glycerine, vaseline and lanoline as media for the preservation of vaccine material have for years been a subject of some discussion in India. In Bengal lanoline has been most successfully used, in the Punjab vaseline, in Assam glycerine. In Madras, it is well known, lanoline has been for long much valued by Lieutenant-Colonel W G King, CIE, I.M.S., the Sanitary Commissioner, who has for years past paid special attention to this subject. This question came to the front a few years ago when Dr Monkton Copeman published his *Milroy Lectures* for 1898. It appears that at one time Dr Copeman held an high opinion of lanoline as a killer of extraneous organisms but subsequently he seems to have accepted the experiments of Dr Blaxall, which pointed to the great superiority

of glycerine There can be no doubt that lymph stored in glycerine, is, after a few weeks storage, free or almost free from "extraneous organisms," but this credits glycerine with extraordinary selective powers, in that, as Lieutenant-Colonel King writes (*Journal of State Medicine*, December, 1901, p 738), "it still respects the hypothetical microbe of vaccine, but slays indiscriminately all interlopers," and it is but reasonable to imagine that having slain the less fit microbes it would turn its attention to the vaccine microbes which survived "Is there then," asks the Sanitary Commissioner of Madras, "a relation between the rate of killing of the extraneous micro-organisms and the duration of activity in preserved vaccine?"

This question Dr King put before Dr S Rao, the Bacteriologist to the Mysore State, who, as the result of a series of experiments, claims to have shown that both lanoline and glycerine do kill extraneous organisms, and that while this action is slower in lanoline, yet lanoline has the power of preserving unimpaired the activity of vaccine for a longer period, and, moreover (as long ago claimed by Gottstein and Dr King), lanoline has the power of not permitting the penetration of microorganisms, thus offering a valuable protection where vaccine has been carelessly exposed as the operator only has to remove the exposed surface film with a sterilised instrument

Dr King concludes that results gathered from various parts of India show "conclusively that, under conditions of transport and storage such as are there feasible, the duration of activity of lanoline vaccine is indubitably greater than in the case of glycerine"

AMOEBC DYSENTERY IN CHILDREN

A VALUABLE paper on some cases of amoebic dysentery in children appears in the *Johns Hopkins Hospital Bulletin* for December 1901, by Dr S Amberg, M.D. In this paper Dr Amberg describes five cases met with in Osler's clinic. He points out the infrequency of the amoebic form of dysentery in children, though medical literature contains several references to such cases

The five cases detailed are of no special interest as regards their clinical history, indeed, they seem to differ in no particular clinically from ordinary children's dysentery. They all recovered, and in no instance was there any hepatic complication. In fact, had it not been for the discovery of the amoebæ the cases would scarce have been recorded, they differed markedly from the classical type of amoebic dysentery, as described by Lafleur and Councilman, who, however, describe also a form of "moderate intensity." Dr Amberg writes "A rather surprising feature in the clinical picture was the little

amount of discomfort which the children of the first group suffered"

Abscess of the liver, which is looked upon as the natural complication of amoebic dysentery in adults, is of rare occurrence in children. Dr Amberg collects notes of twelve cases of liver abscess following dysentery in children, but in few cases has the finding of the amoeba been recorded. One is suspicious of the "dysenteric" origin of a liver abscess which came on "several years" after an attack of dysentery. Dysentery of one sort and other is a common complaint, and a mere history of it in a liver abscess patient may mean very little

In Dr Amberg's cases the reaction of the faeces was mostly alkaline, seldom slightly acid. The amoebæ were stained by Harris' method with toluidin-blue in water solution. The endosarc is stained blue, while the ectosarc remains free or is stained later and less deeply. Dr Amberg does not agree with Harris that the toluidin-blue kills the amoebæ, as motile amoebæ were found three or four hours after staining. The amoebæ may also be well stained with methylene-blue and neutral red, in watery solution

Dr Amberg also notes the occurrence of the Charcot-Leyden crystals in four out of five of these cases in the faeces. Their presence in the faeces of persons suffering from helminthiasis is well-known, and a close relationship exists between these crystals and the eosinophile cells, as pointed out by Roemer. As regards the presence of the amoebæ in the stools of healthy children, it is pointed out that a few hundred specimens were examined in Baltimore and the amoebæ never discovered. It may also be mentioned that in three of Dr Amberg's cases the agglutination test with Shiga's bacillus gave only negative results. A valuable table is also given, showing the results of blood examination of the five cases, a subject which has been too little examined, though anaemia is a well-known clinical sequela of many kinds of dysentery. We commend this paper to all in India who are working at dysentery. A series of dysentery cases worked out in this thorough way would throw much light on the nature of the dysenteries which are so common in India

A RUSSIAN EXPERIENCE OF LITHOLAPAXY

In the *Medicinskoe Obozrenie* (July 1901) Drs V V Irschik and T P Krasnobaiet relate their experiences of litholapaxy (or lithotripsy as they prefer to call it) in 117 cases in children. The ages of the children and the size and nature of the stones are not given in the abstract from which we quote, but their results and conclusions are so exactly in accordance with experiences in India that we give them as follows—

(1) The mortality was very slight (17 per cent). Yet, as a rule, with the present method

of perating, lithotripsy should accomplish a cure in all cases, (2) with possibly few rare exceptions, lithotripsy has no contra-indications if it is possible to grasp the stone with the instrument, and the urethra is sufficiently spacious, or, if contracted, is sufficiently dilated, (3) lithotripsy gives the most rapid recovery, which is impossible to achieve by means of lithotomy. In hospitals it shortens the time during which the patient must remain in the institution and thus cheapens the cost of maintaining each individual patient, (4) lithotripsy does not create conditions for relapses. As shown by the authors' cases, relapses are extremely rare, and at all events not more frequent than in cases of lithotomy, (5) lithotripsy should replace lithotomy, the latter being applicable only to exceptional cases

THE TRANSACTIONS OF THE NAGPUR MALARIA CONFERENCE

THE volume of the transactions of the recent Malaria Conference at Nagpur will be looked forward to with interest. We understand that it will be published early in April. The following will be the contents—President's address by Colonel Scott-Reid, I MS, lecture on the Nagpur investigations by Major Andrew Buchanan, I MS, address by Hon'ble Mr A H L Fraser, CSI, the Chief Commissioner. Then follow papers on malaria without parasites by Drs Stephens and Christophers, on malignant tertian by A Buchanan, the value of the spleen test by S P James, observations on crescents by A Buchanan, the nomenclature of malaria fever by A E Grant and A Powell, the typhanosoma of horses and rats by A Powell, quartan and tertian fever by A Buchanan, working of the microscope by A Powell, the Romanowsky stain by G Lamb, the blood changes in continued fevers by L Rogers, &c. Section IV will contain papers on mosquitos by E H Aitken (E H A), by Stephens and Christophers, Liston, A Buchanan and A Powell, then will follow Captain Budwood's practical paper which we have already published, and a section is devoted to the Resolutions of the Conference, in one of which it is clearly stated that it is the unanimous opinion of the Conference that typhoid fever is "of common occurrence in Natives of India"—a conclusion which writers in our columns have pretty certainly established. The resolution dealing with the *Nomenclature* of the malarial fevers is one we discuss elsewhere, and it is difficult to see how any simpler way out of the present *impasse* could have been suggested.

Altogether the volume is one which will be looked forward to. Messrs Thacker & Co, Bombay, are the publishers. The price will be about five rupees only.

IN the *Edinburgh Medical Journal* for February 1902 two articles appear of special interest to readers in India. The first is a very good résumé of the voluminous report of the Indian Plague Commission by Dr C H Stewart, the Professor of Public Health at Edinburgh, and the second, which has a personal note, is entitled "*A phase in the History of Cholera in India*" by Andrew Duncan, MD, BS, of the London Tropical School, and formerly (though he proclaims not the fact at the head of the article) an officer of the Indian Medical Service.

Those who remember the conditions of fifteen or twenty years ago in India will not need to be reminded of the fate of the men of that day, who, like Shirley Deakin and Andrew Duncan, had the courage to be in advance of their time. Now at a period when civilians and even military officers write volumes on plague, it will scarcely be credited that some men suffered for advancing the then new, but now universally accepted, view of the water-borne spread of cholera, and Dr Duncan's present article clearly shows that, however acceptable the mysterious views of Surgeon-General J M Cunningham may have been to the powers of that day, there were still many men who refused to accept them and who preached the water-spread of cholera, *eg*, W R Rice, A C DeRenzy, Barry, Surgeon-General Burnell, Cornish, W Moore, Townsend, Payne, Geoffry Hall, Shirley Deakin, T Murray, Irvine, and we may add Andrew Duncan.

At the 114th regular meeting of the Burma Branch of the British Medical Association it was proposed by the Right Revd Lord Bishop Strachan and seconded by Dr Pedley and carried unanimously "that the Burma Branch of the British Medical Association desires respectfully to draw the attention of the authorities to the fact that medicine and sanitary science are not represented on the Council of the Viceroy of India or on that of the Lieutenant-Governor of Burma, while engineering, law, commerce, &c, are directly represented. In the interests of public health the Branch is of opinion that medicine and sanitary science should also be directly represented on these Councils."

The Honorary Secretary was directed to forward a copy to the local government with a request that a copy might be forwarded to the Government of India.

The movement thus begun is one to which we wish every success.

THE report of the Indian Plague Commission give little support to the view, which has been sedulously spread, and even quoted as gospel by Calmette, that the first cases of plague appeared in Calcutta in 1896 shortly after its discovery in Bombay. We have often referred to this inci-

dent as an example how repeated assertions are taken as history, but the following opinion of the Plague Commission should set the matter at rest —

"In the opinion of Dr Simpson, formerly medical officer of health for Calcutta, the existence of plague in Calcutta must be referred back to 1896, when a certain number of cases of bubonic disease were discovered in the city. The grounds upon which the diagnosis of plague was based were in some cases of the *slenderest description*, consisting as they did on the one hand of a clinical history of indolent bubo combined with a certain amount of transient constitutional disturbance, and on the other hand in the discovery, in the preparations made from the blood of patients, of a few isolated diplococcal forms, regarded as plague bacilli." (Report, vol 5, p 46)

THE recognition within recent years of the widespread distribution of undulant or Malta fever is a somewhat remarkable fact, and raises the question as to whether the disease has long existed or has been recently imported. In the United States, though cases had from time to time been recognised in travellers, there has recently been considerable attention paid to the disease, and in many recent instances, *e g*, at Hot Springs, Arkansas, the cases have been found in soldiers recently returned from the Philippines. It will be worth watching if the disease is capable of taking root in the United States.

In India the origin of the disease, whether imported or indigenous, is quite unknown, certainly opportunities for importation have for long existed

MAJOR W C GORGAS, Surgeon, U S Army, Chief Sanitary Officer at Havana, in a letter to Major Ronald Ross (which we have seen) notes that for the first time since the English occupation of Cuba in 1762 there has been an October free from yellow fever. He also estimates that the mosquitos have decreased by ninety per cent as compared with the numbers of the previous year. Last year they had 74 deaths from yellow fever, this year "no deaths and no cases." "This, I am convinced," writes Major Gorgas "is entirely due to the mosquito work." He believes chiefly in killing off the infected mosquitos in infected localities by burning pyrethrum powder.

THE *Polyclinic* (for February, p 59) contains a strange note on "Malarial ulcers and malarial eruptions." On what grounds these ulcers are classed by Dr Ken Cross as malarial we fail to see. Surely the fact that one may scratch a mosquito bite into a sore does not prove the resulting ulcer to be malarial!!

THE discussion on syphilis in the native races by the Polyclinic Committee on climate, did not advance the subject much. Dr E J

Simpson made some good remarks on the abuse of mercury by native *hakims*, &c. Mr de Korte said that syphilis in the native races of South Africa was "chiefly a non venereal disease," and that the disease was propagated by "accidental contagion." It is a pity that the report of the discussion is so brief as to leave us in doubt as to what the speaker meant.

THE next meeting of the British Medical Association will be held at Manchester

APROPPOS of the discussion recently raised by Mr P J Fieyer's article on removal of the prostate, we note that Mr E Hurry Fenwick in a very lucid article on the subject (*Practitioner*, February 1902) points out that "Mr Fieyer grasped the idea that in enucleating adenomatous masses, we were practically often emptying the capsule of the prostate, and that it was wise to do so. The brilliancy of Mr Fieyer's suggestion rests on his insisting that all should be removed as a general rule."

IN the second revised edition of his "*Gnats or Mosquitos*" Lieutenant-Colonel G M Giles, I MS (ret'd), gives a prescription for a mosquito-killing pastille, which, after trial, we can thoroughly recommend for ridding a room of these insects. Take one part each of nitre and charcoal to eight parts of powdered sulphur, mix into a paste, with gum water, and make up into small conical pastilles. Let these dry in the sun, and burn one for every 1,000 cubic feet in a room, and all the mosquitos taking refuge under tables and clothes will rapidly succumb. The pastilles can be obtained from Messrs Waldie & Co, Cawnpore, but any compound can make them up, they cost about one pice each.

THE recent outbreak of plague in Alipore Central Jail only lasted a week, there were seven cases, four fatal (including one fatal case of cerebro-spinal meningitis). The first case was in a prisoner who had been unloading coal at the jail *ghât* on Tolly's nullah, and slept in a workshed adjoining No 20 ward, from which ward nearly all the cases came. As soon as the first case was discovered some 1,900 prisoners were set to work to scrape, deluge with perchloride, and lime-wash all the sleeping barracks. The whole jail was thus disinfected in one day, and the inmates of the two affected wards were evacuated into temporary sheds for a few days. The occurrence of a fatal characteristic case of cerebro-spinal meningitis coming from the same gang as the undoubted plague cases is a strange coincidence.

Will intending contributors please note that papers for the SPECIAL MEDICO-LEGAL NUMBER should be in the Editor's hands by the 1st May, or earlier if possible.

THE HARVEY MEMORIAL FUND

SECOND LIST OF SUBSCRIPTIONS

	Rs	4s	P
Amount already acknowledged	971	0	0
Major R C MacWatt, I M S	100	0	0
Lieut-Col D Wilkie I M S	32	0	0
Major E Roberts, I M S	32	0	0
Capt E H R Newman, I M S	32	0	0
Capt. G W Frost I M S	16	0	0
Lieut Col H McKay, C I F, I M S	100	0	0
Capt W E A Armstrong, I M S	32	0	0
Capt E Wickham Hore, I M S	32	0	0
Capt J W Grant I M S	16	0	0
Capt S H Burnett, I M S	100	0	0

Reviews.

Synopsis of Practical Chemistry (Qualitative), Inorganic and Organic—By C H BEDFORD, D Sc, M D (Edin), Professor of Chemistry, Calcutta Medical College, Major, I M S Calcutta, S K LAHIRI & Co, 1902 Price, Rs 2

ONE may usually fairly judge of the class of work done by or expected from students in a Medical School by an examination of the text-books used by them. We may, therefore, fairly conclude from the excellent *Synopsis of Practical Chemistry* just published by Dr Bedford that the students at the Calcutta Medical College are expected to have a good practical knowledge of Chemistry.

There are many text-books on chemistry, but as regards practical instruction we know of none more useful than the present work.

By the time the student has gone over this series of tests of substances, organic and inorganic, he cannot fail to have acquired a good knowledge of chemistry, and what is even more important he cannot fail to have had his powers of exact observation stimulated and developed by such a course.

We are also glad to see that Dr Bedford has also included in his practical course several gravimetric and a good many volumetric estimations of the urinary constituents. This not only teaches the student the methods of quantitative analysis, but the knowledge gained is of practical value to the medical student.

The present volume is admirably adapted for use in the Laboratory, it cannot possibly be twisted into use as a cram book. By use of various types differing in size and colour the important tests and inferences are impressed upon the eye of the student, and we may add that Dr Bedford has personally performed every test mentioned in the book as a guarantee of their accuracy. In clearness and simplicity of arrangement the book is unique.

This practical volume can be strongly recommended to the medical students of all our Indian Colleges, and to those art or science students who take up chemistry.

The price of the book is only Rs 2, a low price purposely arranged to suit the pockets of Indian medical students.

We congratulate Major Bedford, I M S, on its production, and his publishers on the style and get-up of the volume.

A Clinical Handbook of Urine Analysis (Qualitative and Quantitative)—By C H BEDFORD, D Sc, M D (Edin), Professor of Chemistry, Calcutta Medical College, Major, I M S, Calcutta S K Lahiri & Co, 1902, pp 109 With 6 pages of illustrations Price Rs 2

THIS volume on Urine analysis, though in some respects a companion-volume to Major Bedford's *Practical Chemistry*, is mainly written for the benefit of the general practitioner. The medical man who has urinary tests to perform must needs have a volume such as this before him or laboriously note down the consecutive steps of each process before proceeding to apply it.

The volume commences by a few remarks on collecting urine for analysis and then goes on to describe the urine under headings—quantity, colour, odour, reaction, specific gravity, transparency, deposit, &c. Then follows a brief and clear account of the microscopic examination of the sediment, which are also well illustrated in the plates at the end of the book. Then comes the qualitative chemical examination of albumin, other urinary proteids, mucin, blood, chyluria, sugar, bile, &c. The following sections deal with the quantitative examination of albumin, glucose, urea, phosphates, &c, and this is followed by a brief and useful note on the discrimination of urinary calculi, a matter of much interest to the surgeon in India.

The sections dealing with albumin and sugar are very complete and so clearly and admirably arranged that the practitioner will have no difficulty in following them.

In dealing with the detection of sugar in the urine the Saffranine test is preferred. It is not only the simplest, but also fortunately one of the surest tests for glucose, and is not interfered with by the presence of uric acid, creatin, &c. The solutions keep well and are easily prepared. The phenyl-hydrazine test is also fully described, it is so delicate that it may even show a slight reaction with the traces of glucose present in healthy urine. Fehling's test is also fully described, and its advantages and its limitations set forth. In another section is a description of the quantitative tests, Fehling's and Pavy's modification.

The above descriptions show the thorough way in which each substance is discussed. Other sections deal with polarimetry, estimation of urea, phosphates, chlorides, oxalates, &c, and an appendix describes the methods of detecting the tubercle bacillus and the gonococcus in urine.

The book is one to be strongly recommended to all practitioners. It is altogether practical,

and entirely free from padding. To the clinical Physician, the Surgeon, or the Examiner for Life Assurance such a volume is indispensable, and for such purposes Major Bedford's volume can be certainly commended.

A Handbook of Hygiene—By LIEUTENANT-COLONEL A. M. DAVIES, R.A.M.C., D.P.H. (CAMP). Second Edition, illustrated. London: C. GRIFFIN, & Co., Ltd., 1901. (Griffin's "Pocket Book" Series) 8s 6d net.

We heartily welcome this, the second and revised edition of Lieutenant-Colonel Davies' admirable "Handbook of Hygiene." It is a publication alike a credit to its author and publishers. It is most elegantly got up in leather, limp, with rounded corners and gilt edges, and in every way suited to be the pocket guide and *vade mecum* of the sanitarian.

We have long known and valued the first edition of this handbook, published in 1894, and can say without hesitation that in its present form it is absolutely reliable and up to date.

The volume though small is not a compilation of the elements of sanitation, but is a veritable text-book or treatise on hygiene, all unessential matter is omitted, but the reader who turns to it for reference on some knotty point will rarely be disappointed.

The long experience of Lieutenant-Colonel Davies as Sanitary Officer and Bacteriologist at Army Head-Quarters, Simla, renders what he has to say on many questions of hygiene of special value to the public health officer in India, and the book is eminently practical in its advice and recommendations.

There is little need in our giving a synopsis of its contents, the table of contents is the same as that of volumes many times its size. Air, ventilation, water and water-supply, food and dieting, removal and disposal of sewage, clothing, habitations, personal hygiene, soils, climate, causation of disease, and disinfection are very fully treated, indeed in reading the sections one may easily forget that one is not reading a ponderous treatise. Everything is there, expressed in crisp and clear language and evidently written by one who has every department of his subject at his finger's end. Yet the book is no mere synopsis, it is original in every page, yet shows evidence everywhere of a study of the latest writings on every subject.

We admit ourselves to be enthusiastic over the volume, because, though we have seen and read many volumes on hygiene, there is none to which we can give more honest praise, and we believe that the reader who purchases it will readily admit he had made a good bargain.

Of the many subjects dealt with in this little volume, we can but refer to a few. The section on sewage disposal is particularly good. The résumé of the question of the biological treatment

of sewage is very full and complete, and Lieutenant-Colonel Davies concludes his section on the micro-organisms of sewage by recommending the Manchester "incubator" test, but "it is most desirable that some biological test should be devised for all effluents passing into streams that may be used for water-supplies; a sterile effluent cannot be hoped for, but at least it should not contain large numbers of *b. coli*, *b. enteritidis*, or even *b. tuberculosis*." The chapter on climate is very good and contains a résumé of the discussions of the last few years on the question of the colonisation, that is, acclimatisation of Europeans in the tropics. Chapter X, which deals with the causation and prevention of disease, is also admirable, and the portion which interested most in this section is the clear and impartial discussion of the variableness or mutability of bacteria. We refer to this question, as regards enteric fever, in another place.

In conclusion, we have nothing but praise for this complete handbook of hygiene, its portable size as well as its contents recommend it to many. We would like to see it in the boxes of every field hospital, and in the bicycle bag of every sanitary officer. We congratulate Lieutenant-Colonel Davies and his publishers alike on its production.

Quain's Dictionary of Medicine—By various writers. Edited by DR. MONTAGUE MURRAY. Assisted by DR. J. HAROLD and DR. W. CECIL BOSANQUET. In one vol., pp. 1892. Price, one Guinea. London: Longmans & Co., 1902.

EVEN to attempt to adequately review the immense mass of matter in *Quain's Dictionary of Medicine* is a formidable undertaking. The present edition, published in January 1902, is the third, and it returns to the one volume condition of the first edition, 1882. We think this is a distinct improvement, and the volume, though it contains nearly 1900 pages, is still not too cumbersome.

The present edition is edited by Dr. H. Montague Murray of Charing Cross Hospital, assisted by Drs. Harold and Bosanquet, and is written by about 300 writers, comprising most of the leading physicians, surgeons and pathologists at home as well as several medical men belonging to the Indian services, *eg.*, Sir Joseph Fayrer, Kenneth McLeod, Andrew Duncan, Ronald Ross, Major W. J. Buchanan, and Dr. W. J. Simpson. The type of the present edition is somewhat smaller than that of the 1894 edition, but it is still clear and good.

As we said above it would be impossible for us to notice all the valuable articles contained in this veritable encyclopædia of medicine and hygiene. We can only refer to a few which struck us as particularly good, *eg.*, the articles on skin diseases by Dr. James Galloway, on the stomach and intestines by Sidney Martin and Lockhart Gillespie, on serums by J. W. Washbourn, on

general paralysis by Percy Smith, those on insanity by Blanford and Ford Robertson, the nervous diseases articles, by Sir William Gower, and that on typhoid by Sir William Broadbent. The following articles are by Indian Medical Officers — Ronald Ross on malarial fever, Andrew Duncan on dysentery, W J Buchanan on liver inflammations, cholera by Kenneth McLeod, other articles on tropical diseases are beri-beri by Max Simon, liver abscess and filariasis, &c, &c, by Manson, blackwater fever by Rees, plague by W J Simpson, leprosy by J Cantlie, psoriasis on spine by G Thun, and Malta fever by D Bruce. The article on sunstroke by Fayrer is revised by Kenneth McLeod. We direct special attention to the article on malarial disease by Ronald Ross. It runs to 21 columns, and contains the most able and complete account of the whole subject of malaria that we have ever read. The vast chasm which separates our present knowledge of malaria from that of only seven years ago will be realised when any one compares this article with the 8 columns in which Prof Maclellan ably summed up our knowledge of the subject in 1894. We would particularly direct attention to the following portions of Ross' article, the description of the parasites, the pathological anatomy, the blood changes, the modifications of the paroxysms, the pernicious types, and especially the paragraphs on the "procession of the paroxysms," the continued and remittent types of the fever, and above all to the able description of chronic malaria, though in the discussion of the nature of enlargements of the spleen we think Leonard Rogers would object to his work on the connection between malarial disease and a filtered water-supply being claimed as merely "tending to show that splenic tumour may depend upon impurity of water-supply." In small compass this article contains the pith of all recent research on malaria, and its study is strongly commended to the reader. The article on cholera is that of Macnamara revised by Kenneth McLeod, and will be found to contain a brief and complete account of this disease, the bacteriology of which is reviewed by R T Hewlett. The article on choleraic diarrhoea by Kenneth McLeod is also good. We have much praise for the article on dysentery by Andrew Duncan, we note that he describes six forms, *viz*, acute catarrhal, diphtheritic, tropical or amoebic (*sic*), the dysentery of war, chronic and modified dysentery. We may object to the term amoebic or tropical, which might lead the ignorant to believe that this is the common form in the tropics, but we note that Dr Duncan is not a believer in the amoeba, which he believes to be an epiphenomenon rather than an exciting cause. We note that mention is made of an arthritis complication of dysentery, a point till recently overlooked by English writers on dysentery. The description of the dysenteric stools is good, better indeed than in most articles we have read. The most surprising part

of this otherwise excellent article is the scanty reference to the saline treatment of dysentery. The author evidently prefers ipecacuanha, and we simply fail to understand the following remark — "It is best not to give it (magnesium sulphate) in saturated solution." As a matter of fact a saturated solution is the usual method of giving this very useful drug in dysentery. We would also like to have seen a more pronounced opinion on the communicability of dysentery and more details as to its etiology. Dr Duncan quotes rather the opinions of others than gives his own.

Dr Manson's article on Filariasis is very good, and he maintains the distinction between *f. nocturna* and *f. diurna*. His article on liver abscess is a good résumé of the subject but contains nothing new. We note that he still strongly advocates the dysenteric origin of liver abscess and "safely asserts that 75 per cent of cases have a history of some degree of dysentery." We do not know how he arrives at this high figure, the latest Indian Report on the subject (Sanitary Commissioner's India Report for 1900, p 24) gives only 53 per cent out of 453 cases in the years 1896-1900. In our opinion Dr Manson does not give enough credit to other forms of intestinal ulceration, in fact he seems (p 883) to think that ulceration *per se* is not to be regarded as a cause. This is in opposition to recent Indian opinion which tends to associate the disease with other forms of ulceration also, e.g., typhoid and even appendicitis.

We may note that in his article on blackwater fever Dr D C Rees does not believe in the quinine origin of that complaint, but inclines to the view that it is due to a specific agent as yet undetermined.

We have no more space to devote to noticing this admirable edition of Quain's Dictionary. We believe that the present edition will maintain and even increase the repute of the Dictionary. It can be commended to all as a thoroughly reliable and thoroughly modern medical encyclopædia. Its price has been reduced to one guinea, so we have little doubt it will hold its place among its many rivals.

Illustrated Medical Dictionary. By W A N DORLAND, M D. 2nd Edition, Revised, 1901. W B SAUNDERS & Co, London and Philadelphia.

THIS is a very satisfactory Medical Dictionary, not only does it give the origin and meaning of all words used in medicine and the cognate sciences, but it contains numerous specially prepared tables of tests, stains, staining methods, methods of treatment, &c. In it the reader will also find tables of muscles, nerves and veins, of bacteria and bacilli, of weights and measures, eponymic tables of diseases, operations, signs and symptoms. The important features of pronunciation and derivation have received careful attention, and the phonetic system of indicating

the pronunciation of each word will be found accurate. The illustrations are very numerous and show to the eye what could only be imperfectly described in words. The typography is good and clear. The volume is of handy size, and elegantly got up in limp leather binding, and is alike a credit to the author and publisher. The price is only 19s. Altogether we can strongly recommend this book to any one requiring a good Medical Dictionary.

Saunders' Hand Atlas and Epitome of Ophthalmoscopy—By Prof. DR. O. HAAB, of Zurich. Edited by G. E. DE SCHNITZ, A.M., M.D., Professor of Ophthalmology in the Jefferson Medical College, Philadelphia. London and Philadelphia: W. B. Saunders & Co., 1901. Pp. 80 with 80 plates (152 coloured lithographic illustrations). 13s. net.

THIS is an authorised translation from the third revised and enlarged German Edition. We are familiar with the first which was translated in 1895 by Mr. E. Clarke, and which at once sprang into popularity in the English-speaking world. This edition is a decided improvement on the first. The text, which has expanded from 55 to 80 (more compact) pages, contains a decidedly more complete account of the methods of examining the fundus, and includes a description of the pulsation phenomena seen in the eye-ground. We have nothing but praise for the plates which reflect great credit upon the publishers as well as the author. They were all drawn from life by Dr. Haab, who strongly impresses on all students the great importance of colouring as well as drawing all they see with the ophthalmoscope. Very rare conditions have been avoided, and as many pictures of practical importance as possible collected. They number 80 plates as compared with 64 in the first edition. They represent the appearances as they are in the inverted image, and are so coloured that when seen in daylight they produce the impression received in looking at the fundus with artificial light. Nothing could be more beautiful or accurate. The book is invaluable and very cheap. It should be in the hands of all who wish to study or teach ophthalmology.

Rhinology, Laryngology and Otology and their Significance in general medicine—By E. P. FRIEDRICK, M.D., Privatdocent at the University of Leipzig. Authorized translation from the German, edited by H. HALBROOK CURTIS, M.D., of New York. Philadelphia and London: W. B. Saunders & Co., 1900. Pp. 348. 10s. net.

WHAT Dr. Kries did for diseases of the eye in their relation to general medicine has been done in this work by Dr. Friedrich for diseases of the nose, throat and ear. At a period when even sub-divisions of the 'ologies are specialised and monopolised to an absurd degree, it is refreshing to find a work like this which emphasises the interdependence of different branches of medicine. The nose, the larynx and the ear

are so intimately related that no definite boundaries in their morbid conditions can be established. Yet this is just what the otologist and laryngologist and latterly the rhinologist have attempted. In the early days of these specialisms this was no doubt productive of much good. The time has long arrived, however, for them to be merged in general medicine, or at any rate to be studied together and not separately and with a view to their general position as merely sub-divisions of medical science. The editor is enthusiastic as to the merits of Dr. Friedrich's work—a book so rich in statistics and references, so learned in its argumentative deductions, and at the same time so convincing in the manner of conservative presentation, that no specialist can afford to neglect the opportunity of acquainting himself with the subject-matter of this work. The results of the vast clinical experience of the author, the detailed reports, and the extensive bibliography make the volume valuable alike to the specialist and the general practitioner. An unprejudiced perusal of the work makes one admit that the claims are not much exaggerated.

The subject is dealt with in the following order:—Diseases of the Respiratory Organs, of the Circulatory System, of the Digestive system, of the Blood, Chronic Constitutional Diseases, Acute and Chronic Infectious Diseases, Diseases of the Kidney, of the Skin, and of the Sexual Organs, and of the Eye, Intoxications, and Nervous Diseases. The general plan is to first discuss the physiological relations of the organs concerned, *e.g.*, nose, throat and lungs, then the diseases of the general organs (*e.g.*, again lungs) due to functional or organic diseases of the special parts (nose and throat), and lastly, the alterations in the latter dependent on diseases of the former.

In this way the mutual interdependence of the various morbid processes is clearly brought out. To the general practitioner who recognises this interdependence the book will be less useful than to the specialist and the student. To all, however, it can be recommended as a book from which they will derive much profit.

Saunders' Medical Hand Atlases—Anatomical Atlas of Obstetrics with special reference to diagnosis and treatment by Dr. OSKAR SCHAEFFER. Authorised translation from the second revised German Edition. Edited by J. CLIFTON EDGAR, A.M., M.D., with 122 figures on 56 lithographic plates and 38 other illustrations. W. B. Saunders & Co., London and Philadelphia, 1901. Price 13s. net.

THE appearance of the second edition of this atlas has been much delayed, as it was necessary to subject both the illustrations and the text to a complete revision. A comparison with the first edition shows that most of the coloured plates are new. In this revision the author has been guided chiefly by the demands of the practical,

clinical side of obstetrics, and for this reason scientific explanations and anatomical, histological and pathological data are printed in a different type from that of the ordinary text. In this way he has fully preserved the peculiar character of an atlas accompanied by a complete abstract.

The atlas is mainly divided into two parts. Part I contains chapters on (1) physiology and diagnosis of pregnancy, (2) anatomy, development and examination of the pelvis, (3) normal labor, and (4) the puerperium and the treatment of the new-born infant. Part II treats of pathology and treatment of pregnancy, labor and the puerperium and is sub-divided into five different chapters. A tabulated list of drugs and prescriptions, commonly used in obstetric practice, is appended. Each chapter bears evidence of careful revision with utilization of recent available literature. We cannot speak too highly of the drawings, which are a credit to the artist and the publishers. We would, however, draw attention to Figs. 8, 27 and 153 which do not seem to us to be very clear. Fig. 8 is supposed to show "embryo from an abortion at the end of the second month," but no embryo is to be seen in the drawing. In the explanation of the plate we find the following sentence: "The ovum must have been ruptured during labor and the embryo expelled with the amniotic fluid, unless as happens frequently in early abortions, the embryo died first and was absorbed." Apparently this is a mistake. The atlas will be of special value to the student as a book of reference to be used in conjunction with the larger treatise on obstetrics.

Saunders' Medical Hand Atlases Special Pathological Histology—By DR. HERMANN OURK. Authorised translation from the German. 13s net.

THIS work consists of two handy volumes, each containing about 120 coloured illustrations in 60 plates interleaved in the text, which describes briefly the pathological processes which occur in each organ, together with short descriptions of the illustrations. At the beginning of each system a brief account of the histology of the organ or tissues is given. The first volume deals with the circulatory, respiratory and gastro-intestinal systems, and the second with the remaining systems with the exception of the special senses. The book is intended to be used in the study of microscopical specimens, and from the copiousness and general high excellence of the coloured plates it is admirably adapted for this purpose. All the drawings have been made from actual preparation, and are in no sense diagrammatic. The text consists of from one or two pages interleaved between each plate, and is clearly written, while it refers to other processes besides those illustrated. It is not to be expected that all the plates are equally happy,

but we have been more struck by the beauty and accuracy of the great majority of them than by deficiencies of a few. The selection of subjects is also good, although there is some tendency to reproduce very rare affections, while the nomenclature is at times likely to give somewhat alarming to the young student, as for example when portal pyemia is labelled "Mycotic pylethrombophlebitis." We miss such familiar features of tropical pathology as malarial pigmentation of the spleen and liver, leprosy, etc., although there is a fine plate illustrating dysentery. The book, however, is one which we can safely recommend to students of pathology as a reliable and wonderfully cheap atlas, which will be a most useful guide in the practical study of this difficult subject.

Saunders' Medical Hand Atlases Atlas of the nervous system including an epitome of the Anatomy, Pathology and treatment—By DR. CHRISTFRIED JACOB. Authorised translation from the revised second German Edition. 15s net.

THIS handy volume is of the same size as the pathological histology atlas of the same publishers, and it contains 112 coloured lithographs and 139 other illustrations, some of which are from photographs, and many in colours, which with the descriptions of the plate, occupy the first part of the volume and are followed by the text. Part I deals with the morphology of the central nervous system in which the general anatomy of the brain is well illustrated and described. Part II treats of the development and structure of the nervous system, and includes some plates illustrating the histology of the nervous system, and diagrammatic schemes of the neuron, etc. Part III illustrates the topographic anatomy of the nervous system, and forms the largest and most useful section of the work. A good feature of this part is the insertion opposite the coloured plates of sections of the nervous system of outline tracings of the same with the names of the parts inserted. At the end of this section several very useful schemes are placed. Part IV and V deal respectively with general and special pathology and treatment of the diseases of the nervous system, including the special pathology of the spinal cord and peripheral nerves. Both the secondary degeneration and the tract diseases of the spinal cord are well illustrated in the plates. The text of the latter half of the book also contains many useful diagrams, the anatomical part being of great help in aiding the diagnosis of focal lesions. A brief account of the principal diseases met with is followed by an account of the diagnosis of the disease, and a still shorter and somewhat sketchy description of the principles of treatment. The author in his preface says that he has endeavoured to free this subject from the odium of being considered the least attractive branch of medicine by

presenting the peculiarities of its normal and pathologic anatomy in an intelligible form. In this aim we think he has to a large extent succeeded, and this book will be a great help to practitioners in working out the frequently met with atypical and difficult cases of nervous disease.

Handbook of Bacteriological Diagnosis for Practitioners—By W. D'ESTE EMERY. Published by H. K. Lewis 5s.

THIS little book is intended to teach the practitioner such simple methods of microscopical examination of pus, blood and other material for bacteria, etc., as he can himself carry out with the aid of stains and a good microscope, and how to take material for sending to a well equipped bacteriological laboratory for a more complete examination. It includes instructions for the clinical examination of the blood, both for estimating hæmaglobin and corpuscles and the search for malarial parasites. The diagnosis of cholera and plague is briefly described. Widal's reaction with both living and dead cultures is minutely given, but we observe that the method of dilution recommended is that by means of a platinum loop, although the use of Wright's tubes is both more accurate and more rapid. Two coloured plates and a number of woodcuts add to the value of this little work, which appears to be accurate as far as it goes, and may be recommended to the class for whom it is intended.

A Text-Book of Obstetrics—By BARTON COOKE HIRSH, M.D., 2nd Edition (W. B. SAUNDERS, Philadelphia). Price, 21s net.

THIS text-book of 820 pages, is divided into an introduction, on the anatomy and physiology of the female sexual organs, and seven parts. The parts describe the management, the mechanism and the pathology of labour, obstetric operations, the physiology and the pathology of the newborn infant. The anatomy of the pelvis is only superficially described, but stress is put on important points such as the fact that the lymphatic ducts of the lower fourth of the vagina terminate in the inguinal glands.

The account of the development of the sexual organs is brief and so condensed that it would be difficult for a student to follow it, unless he had already a knowledge of the subject. Our author says "it has been his constant aim to condense the text as far as is consistent with a comprehensive treatment of the subject." He has succeeded in his aim and given clear and comprehensive descriptions of the subjects treated, except these introductory accounts of the anatomy of the pelvis and the physiology of the sexual organs. As the work is already bulky enough, he was doubtless well advised in not giving more space to these subjects, moreover, they are plentifully and beautifully illustrated.

The imaginary planes of the pelvic canal are described somewhat differently to what they are in older works. Thus the plane of the inlet is still called the plane of the inlet, but the plane of the cavity is called the plane of pelvic expansion, and the plane of the outlet, the plane of pelvic contraction, a doubtful advantage in our opinion.

When speaking of the connection between ovulation and menstruation in a footnote, Remfry's investigation of the occurrence of menstruation during lactation, is quoted. Among 900 nursing women, menstruation was regular in 20% and present in 43%. Remfry also found that 60% of the women who menstruated during lactation conceived. Among the women who did not menstruate during lactation only 6% conceived during that period. This investigation shows that many more women menstruate during the lactation period than is commonly supposed to be the case.

In describing the development of the foetus, it is stated that some time during the fifth month, the mother usually experiences quickening. Older authors give the fourth month as the month of quickening, and it is so in our experience. The question of superfœtation is dismissed as doubtful in seven lines.

Malignant growths occurring on the placental site are well described, and a good account is given of syncytial cancer.

In speaking of goitre it is stated, that a goitre may take on so exaggerated a development during pregnancy, that asphyxia is threatened. Considering what a lot is written about asphyxia caused by goitre both in surgical and obstetric works, it is extraordinary how few cases of dyspnoea, due to this cause, are seen in the goitrous districts of India. Extra-uterine pregnancy is well and fully described, and the undoubted fact that ovarian pregnancy may take place is recognized.

As regards the extrusion of the placenta from the uterus, the author does not favour the English view that it comes down edgewise, but thinks with the Germans that it comes down like an inverted umbrella and is detached by the diminution in area of the placental site. We are of opinion that both methods of descent occur.

The descriptions of the diseases of the foetus, of deformities of the pelvis and of tumours obstructing labour are all very good. The historical account of how the Chamberlen Midwifery forceps remained a secret in the Chamberlen family for three generations is interestingly told.

The text-book is a little advanced for a student's first book on Midwifery, but it is the best text-book we have read, and we can heartily recommend it to senior students and to practitioners. A word or two of praise is due to the number and excellence of the illustrations. They are original, or copied from many of the best works. The phonetic method of spelling adopted in

America appenis quaint, to say the least, to the English reader, such words for instance as centie, foetus and goitie appear as center, fetus, and goiter. The book is well printed and bound, and altogether an excellent treatise upon its subject.

The Principles of Hygiene—By D H BERGLY, A M, M D, First Assistant, Laboratory of Hygiene, University of Pennsylvania. W B SAUNDERS & Co, London and Philadelphia, 1901. 13s net.

THIS handsome volume contains a clear and succinct résumé of the broad facts of hygiene and is well up-to-date, and though of course nothing more than a sketch of the subject, there is yet sufficient detail to make the book one which may be consulted on several subjects by hygienists with profit.

The chapters on Industrial and School Hygiene are particularly good, but we think that those on soil and the dwelling are not sufficiently full. Immunity and Disinfection are adequately and clearly dealt with, and a lengthy appendix is added setting forth the quarantine regulations in force throughout the United States from which many useful hints may be gathered, though in future editions much purely legal matter might with advantage be omitted or shortly summarised, and the space so gained might be employed in amplifying several chapters which bear more directly on the hygienists' daily requirements.

The illustrations are clear and good, and the book is very well written and printed.

Rough Notes on Remedies—By W M MURRAY, M D, 4th Edition. London. H K Lewis, 1901. Cb 8vo. Price 1s. pp 176.

THE rapid sale of this well-known and excellent little book necessitated a fourth edition, and in it Dr Murray had added an interesting chapter on Rothbury as a Health Resort. Rothbury has been called the Torquay of the North, and it will surprise many that the climate of Northumberland contains such a sunny and sheltered spot.

The rest of the book contains the well-known chapters on the value of arsenic in diabetes, chorea and asthma, on the many virtues of belladonna, and on the value of mercury in heart disease and of nitrate of silver in epilepsy. The chapter on "our mistakes" is a liberal education to the practitioner. The book is so well-known as to require but little recommendation, and we commend it strongly to our readers, if they learn nothing from it but the proper use of arsenic or of belladonna the four shillings it cost will be more than amply repaid.

It is an unpretentious little book, but contains the experiences of an able therapist and a wise physician, and no reader will fail to pick up some hints of great value in his practice.

ANNUAL REPORTS

REPORT ON BOMBAY MOFUSSIL HOSPITALS

THIS report was only reviewed by the Government of Bombay in the middle of November last, so that by the time it reaches an Editor's table for notice it is somewhat ancient.

The total number of dispensaries and hospitals open at the end of 1900 was 517, of which 232 were Government or grant-in-aid institutions.

A large number of private dispensaries are included in the report, nearly 200, and the Surgeon General, though considering that "several of these institutions are no doubt reputable and well managed" is not in a position to vouch for the approximate correctness of their returns.

The total number of in and out-door patients treated at the Civil hospitals was 261,174 a diminution of 38,000 from the previous year but it is a healthy sign to see an increase of 1,187 in the in-door patients. It appears, however, that this falling off is only apparent, for, if the number of dispensaries formerly dealt with in this report is taken the number shows the largest total yet recorded viz., 2,420,028, or more than one third of a million greater than in the previous year.

The sudden increase in the number of venereal cases treated (by over 12,500) was almost entirely in the famine-stricken districts of Gujarat and Deccan, and Civil Surgeons believed that there was a considerable increase in prostitution caused by famine—a point also noted in the report of Sanitary Commissioner with the Government of India (p 25).

As regards Malarial Fevers, there appears to have been a very serious increase and it is recorded that "a severe fever of remittent type, attended with jaundice and often quickly fatal, was unusually fatal during the dry season of 1899-1900." The nature of this fever is unknown, and competent observers failed to discover the spirillum of relapsing fever. It is suggested that this form of illness was a symptom of combined starvation and exposure to the sun, and fever might well be a prominent symptom of such a symptom complex and cases would then be returned by subordinates as "remittent"—that pernicious term which has done so much to render obscure the continued fevers of India. The increase in the number of fevers habitually classed as malarial was undoubtedly, especially in Gujarat. Turning now to surgery,

we find in Statement III A, a large number of operations performed, e.g., ligation of arteries 8, on nerves 5, amputations 472, trephining 4, rhinoplasty 21, harelip only 8, cataract 161 (a small figure compared with other provinces), laparotomy 9, liver abscess 27 (14 cured), hernia 21, strangulated 17, removal of appendix 1, fistula in ano 101, for piles (ligature 63, excision 36, crushing 4, cautery 3), methods proportionately the same as in other provinces but differing from Bombay City hospitals where excision is preferred. (See I M G for December last, p 165.) Operations for Calculi were as follows—Suprapubic 15, lateral perineal 252, median one, vaginal 4, lithotomy 35 and litholapaxy 575.

The hydrocele operations were as follows—They were but few, by tapping 75, tryping and injection 57, eversion of 23, 6, excision of preputial part of scrotum 4, orchiotomies 6, obstetric operations 129.

Surgeon General Bainbridge says that most of the medical officers did good service and commends to notice of Government the following names—

Lieutenant Colonels Gerny, J. McCloghly, and W. P. Cusson, and Majors H. W. Stevenson, M. A. T. Collie, B. B. Grayfoot and J. G. Hojel, I M S.

Correspondence.

INFLUENCE OF COLOUR UPON ANOPHELES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR—In the *Indian Medical Gazette* for December 1901 (p 443) Captain Liston briefly refers to the experiments upon the influence of colour upon *Anopheles* published by me in the *British Medical Journal* of September 14th, 1901 (p 665). He remarks "possibly the character of the cloth which was used in Nuttall's experiments varied." I hasten to inform Dr Liston that this was not the case, the possibility of such an error had been foreseen and guarded against by the use of fabrics of entirely similar texture. Our experiments were made with *Anopheles maculipennis*, and no statement to the effect that other species of *Anopheles* must necessarily behave in the same manner towards colour will be found in my paper. There is in fact every reason to suppose that different species will behave differently, as is the case with other insects. It would be interesting if workers in India,

repeated similar experiments to those I reported. Nevertheless, as will be found by reference to the paper by me and Mr Shipley in the *Journal of Hygiene* for January, a number of observers in different parts of the world (America, West Africa, Madagascar, Palestine) report observations which directly confirm our experimental results. Only the other day I learnt in conversation with a gentleman who had spent 16 years in West Africa, that he had noted the preference shown by species of *Anopheles* there for navy blue. As I have suggested elsewhere, the practical application of these observations is obvious, in the choice of the colour of clothing and possibly of rooms and houses, etc., in malarious districts, the colour naturally being chosen in accordance with the prevailing species of malarial bearing mosquitos, and as the result of direct experiment. A trial is being made at present with the United States troops, whose regulation navy blue shirts are being replaced by white ones, when on service in mosquito-ridden localities. It has moreover occurred to me that colour traps might be used in and about houses where these insects are numerous. These might be of simple construction, let us say oblong horizontally placed boxes provided with a flap, which would permit of their being closed. The insects which have accumulated within the box could then be swept out into a receptacle at one end by means of a broom worked after the manner of a gunswab from the other end. If this were done once or twice a day, the infected insects remaining in the room might very well all be killed off before the expiration of a week which may be taken as the usual time for the parasites to appear in their salivary glands, of course this may seem rather hypothetical, but I think the matter deserves a fair trial by those who dwell in suitable localities.

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CERCOMONADS IN ULCERS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Three years ago I found in several cases of cancerous ulcers and in other rapidly spreading ulcers occurring in Assam and the Dargeeling Terai, vast numbers of small parasites known as Cercomonads. It seemed to me possible that these organisms were the cause of the ulcers but being then closely engaged on malarial work I could not investigate the subject properly and since then I have always forgotten to publish a note on the matter. I now do so in the hope that some one in India will investigate the subject. It is necessary only to examine some of the fresh pus taken from the ulcer next to the necrotic tissue. Swarms of the Cercomonads will be seen rushing about in every direction, that is to say, when they are present. The parasites are somewhat smaller than a blood corpuscle and possess two or more flagella extending from one end, and a short tail or sucker extending from the other extremity. There is also an undulatory membrane along the side. I mention these details for the help of those who have not studied the smaller animal parasites. So far as I could see there was no difference between these Cercomonads in the ulcers and the ordinary *Cercomonas intestinalis*.

Yours faithfully,
RONALD ROSS

LIVERPOOL SCHOOL OF TROPICAL MEDICINE,
February 6th, 1902

THE NEW THERAPEUTICS

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—In reply to enquiries requesting information as to the best books suited for study of the new or rational method (it is not a system) of the treatment of disease, otherwise known as "Alkalometry" or "Active Principle Therapy" (see *Indian Medical Gazette*, November 1901), I beg to note as follows—

(1) The monthly Journal "*Alkaloidal Clinic*," to which is shortly to be added the *Alkaloidal "Surgical Clinic"*—@ \$2 each a year, post free

(2) *American Alkalometry*, Vol. I, a digest of clinic teachings, '94 to '97 inclusive. This is a reprint of the principal articles in the "*Alkaloidal Clinic*," alphabetically arranged by diseases, and is a very valuable help. Price \$2 (Rs. 6, As. 4), postage extra

(3) *A Therapeutic Guide to Alkaloidal—Dosimetric—Medication*, By John M. Shaller, M.D., Professor of Physiology and Clinical Medicine, Cincinnati College of Medicine and Surgery, and Professor of Comparative Physiology, Ohio Veterinary College. \$1 (Rs. 3, As. 2)

(4) *The New Practical Guide to Dosimetric Medicine* By Dr. Burgraeve, author of this new Therapeutic Method (Printed by Wertheimer, Lea & Co., Circus Place, London) \$1 60

There are several other publications, but I would recommend the above to be mastered first by the beginner. All are procurable from the Clinic Publishing Co., Ravenswood Station, Chicago, United States. I shall at all times be pleased to afford assistance to enquirers.

In reply to the question whether the dosimetric tablets and granules can be obtained in India, I would direct reference to Messrs. Plomer & Co., Chemists and Druggists, Lahore, who were making arrangements.

Yours faithfully

P. W. O'GORMAN, M.D., etc.,

Major, I.M.S.

MIAN MIR

23rd February, 1902

GLASSES IN THE ARMY

To the Editor of the "PIONEER."

SIR,—It is very satisfactory to see that at last the authorities have sanctioned the use of glasses in the army, but I would like to correct the popular impression that it is only for short-sighted soldiers. This is quite wrong. There are practically no such men in the British Army. They are all examined as to their capability of seeing a bull's-eye at 600 yards without glasses, and if they cannot do it they are rejected. Here then is the point. Long-sighted men can have their sight made still longer with proper glasses, not all, but the great majority, and it is these men who will be benefited by the new order. But it ought to go still further, the test now applied should be altered. Men should all be tested up to 1,000 yards, being allowed to improve their vision with glasses, so that all sorts of sight would then be allowed, so long as they could see the 1,000 yards bull's-eye with glasses or without glasses. This done the order will benefit the service to a very marked extent as very many myopia or short-sighted men are excellent shots with glasses, vide Mr. Davies, C.S., who has quite six or seven degrees of myopia yet makes his bulls like a man with glasses and can not even see the target without them. A moderate amount of myopia makes a most perfect sight for distance with a glass and for near objects without one.

G. C. HALL, F.R.C.S.,

Nagpur, 14th March

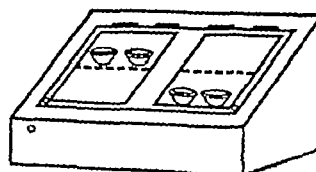
Colonel, I.M.S.

[We republish the above from the Pioneer.—ED., I.M.G.]

STOOL INSPECTION CHAMBER

To the Editor of the "THE INDIAN MEDICAL GAZETTE."

SIR,—After trying the box figured below for over three years in the Hazaribagh Central and Patna District Jails, I have found it so useful that it seems desirable to bring it to the notice of my brother medical officers. The stools of dysentery diarrhoea and other cases in Jail Hospitals are usually kept until inspected in gumlaha or tarred baskets with covers. Flies obtain access to these, and, after their removal, proceed to infect the food in the hospital kitchen or on the prisoners' plates. To prevent this I designed a masonry chamber provided with a large glass door through which the stools lying as passed in ordinary tarred baskets inside, can be inspected. When done with, they are at once removed and cremated. No flies can get near them. For convenience the baskets rest on an upper and lower shelf inside, a small drain is provided—corked when not in use—to allow of the chamber being flushed out. To prevent dogs jumping on and breaking the glass, an outer wooden cover is necessary. The sweepers raise this when the stools can at once be easily inspected. Since introducing these chambers dysentery has been much less frequent.



Two gumlaha shown on the upper shelf in one half and on the lower shelf in the other seen through the panes of glass. Drain in left hand corner for washing out

BANKIPUR

I have, &c.,

F. P. MAYNARD,

Major, I.M.S.

Service Notes.

THE following is the list of I M S officers who passed out of Netley with commissions, dated 31st January 1902 —

The following is the list of surgeons on probation who were successful at both the London and Netley examinations. The prizes are awarded for marks gained in the special subjects taught at the Army Medical School. The final positions of these gentlemen are determined by the marks gained in London added to those gained at Netley, and the combined numbers are accordingly shown in the list which follows —

Marks		Marks	
Laster, A E J	5,881	Harley, T W	4,809
Williams, T S B	5,860	McCoj, J W	5,031
Abbott, S H L	5,674	Hagger, R L	4,666
Greig, A W	5,519	Carter, R M	4,531
Lloyd, R E	5,422	Willcocks, R D	4,513
Clements, J E	5,409	Paterson, T G F	4,379
Steed, H B	5,330	Baker, D G R S	4,338
Bissel, E	5,322	Tyrell, J R J	4,239
Bradley, R J	5,241	Rai, D G	4,091
Woods, J	5,239	Harron, R M	4,036
Ovebeck Wright, A W	5,160	Soroggie, W R J	3,993
Munio, D	5,063	Fairrell, L P	3,817
Loch, J A	5,033		

ROYAL ARMY MEDICAL CORPS

Craig, B A

*Gained the Parkes Memorial Medal and the Maclean Prize for Clinical and Ward Work

†Gained the Herbert Prize, the Prize in Pathology, presented by Professor Wright, and the De Chaumont Prize in Hygiene

**Gained the Marshall Webb Prize of £5 and Medal

**Gained the Martin Memorial Medal

††Gained the second Montefiore Prize of £7 7s and the Prize in Pathology

††Gained the first Montefiore Prize of £21 and Medal

It may be noted that only one R A M C officer joined the Corps during that half year

THE following is a list of the candidates for His Majesty's Indian Medical Service who were successful at the Competitive Examination held in London on February 10th, 1902, and following days. Thirty candidates have been passed instead of seventeen as previously announced

Marks		Marks	
J Macpherson	3,210	H Halliday	2,629
W O Ross	3,056	F E Wilson	2,610
J C G Kimhardt	3,051	B B Paymaster	2,577
G D Franklin	3,026	H Crossle	2,560
J H Gill	3,011	L Cook	2,546
R A Lloyd	2,878	J Forrest	2,490
I A F Barnardo	2,870	L B Scott	2,483
C A Goulay	2,853	J H Ferris	2,456
E A Walker	2,750	W S Patton	2,447
F W Sime	2,746	N W Mackintosh	2,409
L L Hirsch	2,713	W L Trafford	2,393
H Ross	2,681	L Rundall	2,365
H E J Batty	2,666	E C C Munnsell	2,342
G J Davis	2,656	G C I Robertson	2,277
A J V Betts	2,650	D S A O Keefe	2,062

Apparently there were no candidates for the R A M Corps, or if there were none passed, though 22 vacancies and ten candidates were mentioned

We read with pleasure the sympathetic speech of the new Director General A M D, Surgeon General W Taylor, C B, at the distribution of prizes at Netley on January 31st to the 25 I M S probationers and the solitary representative of the R A M C

SURGEON GENERAL TAYLOR'S allusion to the young I M S Officer whom he found working in a small improvised laboratory in a tent on the Malakand Hills, whose work under these conditions led to the identification of Malta fever in the Swat Valley, of course refers to Lieut B W D Greig, I M S, whose paper on "Malta fever in the Swat Valley" we published in March 1901 (p 100), and who, we are glad to know, has now been appointed to work in the Research Laboratory, Bombay

THE institution of the Taylor Prize of £25 is another instance of the interest taken in the Services by the new Director General at the War Office

HON. LIEUT MILY Asst Surgeon M MURPIN is granted 3 months' privilege leave

MAJOR P J LUMSDEN, L M S, Agency Surgeon Kotah, is granted 3 months, privilege leave (including two months for famine)

LIEUTENANT COLONEL J LANCASTER, L M S, is appointed District Medical Officer of Salem

CAPTAIN T H FOULKES, I M S, Chingleput, was granted three months, privilege leave.

CAPTAIN C DONOVAN, I M S, has returned to Madras after one year's furlough

Of the 54 Medical Officers in Civil employ, Madras, 13 were absent on leave on 1st March

SURGEON GENERAL SIR T J GALLWEY, K.C.M.G., C.B., became P M O, His Majesty's Forces in India on 22nd February. He is an M D of the Royal University, Ireland. He entered the A M D in 1874, was specially promoted Surgeon Major in 1895, and specially promoted Colonel in 1899. He has served in Afghan War, Egyptian Expedition of 1892 (Tel el Kebir etc) Sudan Expedition of 1894-5, Dongola Expedition 1896 (C B), Nile Expedition 1897-8, South Africa (Natal) 1899-1901. He is an all round sports man and has the reputation of being one of the best whist players in the Army

LIEUTENANT COLONEL R H WHITWELL, I M S, has been granted another extension of leave for three months. This gives him leave up till 25th June

LIEUTENANT COLONEL J F MACLAREN, I M S, goes to Bonaria as Civil Surgeon

THE *Practitioner* (February 1902) quotes an opportune illustration of the consequences of the neglect of medical advice by officers commanding troops. The President of the American Medical Association, Dr C A L Reed, of Cincinnati, laid the responsibility for the heavy mortality in the American Military Camps during the war with Spain on a general whom he named. It is stated that this military officer set aside the recommendations of his Sanitary officers and by personal example excited his men to violate the most fundamental sanitary laws. With what result. Out of 50,000 men in his command 1,000 died from preventable causes and 12,000 were invalided. Dr Reed adds that the Army Investigating Committee "in the interests of public decency" omitted from their report testimony on this phase of the conduct of the war. One officer who agitated the subject was "banished to the Philippines"

Result — The Surgeon General cannot now fill the vacancies in the Medical Corps

THE *Practitioner* adds that the old pipeclay doctrine that everything must yield to military exigencies is out of date. The maintenance of the health of the men is a "military exigency" of vital importance

THE attention of medical officers in military employ is directed to the list of corrections to I A R, Vol VI (published in I A C, 1902, clause 9). The most important corrections are as follows — 639 A which directs the treatment of tuberculous cases in separate wards and gives modern direction as to disinfection of expectoration, &c. Para 677 is reconstituted and now a Medical officer is informed that he may be called upon to record the reasons for his issuing "extras" in any particular case. 679 A gives orders about the appointing of an orderly medical officer of the day. Para 1175 A is somewhat cryptic. It lays down that "diseases to which persons are specially liable during service abroad, or in consequence of such service are to be regarded as caused by duty"

PARAS 1373 B to 1373 E lay down the rules for appointment of special sanitary officers for each command to investigate the causes of disease, to give practical advice on sanitary matters and to carry out scientific investigations. These officers will be selected from the R A M Corps and will generally be of the rank of major, and should (not must) have undergone a special training and should be in possession of public health diploma

Para 1373 D, also ordains that a medical officer from the station hospital shall be associated with the sanitary officer to carry on the Laboratory work in the absence of the S O. This medical officer is to be relieved of his ordinary duties

PARA 1373 E says that "to further extend the advantages of microscopical examinations (*sic*) and scientific advice in sanitary matters, *small and inexpensive* (italics are ours) laboratories will be established at the head quarters of each district" except Assam and Punjab Frontier.

Why should Assam and the Frontier Force be exempted from these advantages?

It is not clearly laid down who is to be in charge of these district laboratories, the sanitary officers are only directed to "supervise them, and direct the efforts of the officers in charge."

PARA 1527 A directs that "fumigation is not to be considered as a substitute for disinfection," &c

THE new regulations for the dress of Army Hospital Assistants is given in corrections to page 107 of I A. R., vol vii, Dress.

ASST SURGEON M. O'MEALA is appointed Senior Assistant-Surgeon and Honorary Lieutenant

CAPTAIN A. E. HAYWARD PINCH, I M S, F R C S, now on half pay list, and for some time past Medical Superintendent of the Polyclinic Medical Graduates College, London, is allowed to retire from the 17th December 1901

THE following promotions in the I S M D E P, are notified for good service in South Africa—1st class Assistant-Surgeon E. A. St. Romaine to be Senior Assistant-Surgeon and Honorary Lieutenant, 1st class Assistant-Surgeon D. McIntyre to be Senior Assistant-Surgeon and Honorary Lieutenant, 1st class Assistant-Surgeon John Moore to be Senior Assistant-Surgeon and Honorary Lieutenant, and 2nd class Assistant-Surgeon V. V. Obiodetti to be 1st class Assistant-Surgeon. We understand that this is the second brevet promotion for Lieutenant St. Romaine for field service.

WE regret to hear that Major Hendley, the Medical Adviser of the Patiala State, has been seriously wounded in a plague riot.

AN increase in the emoluments paid to Civil Surgeons for the charge of district jails is under consideration of Government.

COLONEL SCOTT REID, I M S, has gone to Punjab as Inspector General Civil Hospitals, Colonel Joubert will follow Colonel Hutchinson in N. W. P. & O., and Colonel Geoffrey Hall, F R C S, I M S, has gone as A. M. O. to the Central Provinces.

IT is stated that Major Drury, I M S, will succeed Lieutenant-Colonel Bomford, M. D., I M S, as Principal, Medical College, Calcutta, on the latter taking leave in July.

CAPTAIN E. J. MORGAN, I M S, is transferred as Civil Surgeon from Banda to Etawah.

CAPTAIN J. M. CRAWFORD, I M S, goes to Naini Tal as Civil Surgeon.

DR H. A. MACLEOD is placed on plague duty in Ballia District, and Capt T. A. O. Langston, I M S, goes to Banda as Civil Surgeon.

LIEUTENANT J. J. URWIN, I M S, has passed the Higher Standard Examination in Urdu.

IN order to provide a trained establishment of nursing orderlies in hospitals of Native troops ward orderlies will be enlisted as part of the fixed establishment of combatants of corps units, in number from one for a Native Battery to 4 per regiment of Infantry and Cavalry. These orderlies will learn recruits' drill and musketry and arms will be served out "to admit of their defending themselves or guarding a hospital or convoy of sick" (I A. C. 5, 1902, para 4 13).

LIEUT. COLONEL JERVIS, I M S, is granted furlough.

MAJOR C. E. SUNDER, I M S, of Gya, will probably take furlough in May.

IT is understood that Capt R. H. Maddox, I M S, wishes to leave the Jail Department and revert to the ordinary line as Civil Surgeon.

THE following note extracted from the *Practitioner* will be found of interest to military surgeons—Surgeon Major F. Merz, in order to ascertain the comparative value of tannoform in preventing and curing excessive and fetid perspiration of the feet (hyperidrosis and bromidrosis) used it on a great

number of soldiers, side by side with other treatment. Each company was divided into three parts: one division was treated—for three nights in succession—with tannoform powder, the second division was treated with the ordinary regimental foot powder, and the third was made to take a cold footbath only. In a week the feet of all soldiers, who in the meantime had attended to their exhaustive drills and marches, were inspected, and the following instructive results were noted. Of those that were treated only with the ordinary footbath, 68 per cent. were found suffering with hyperidrosis of various degrees of severity, of those treated with the regimental foot powder, 52 per cent. were so affected, while of those treated with tannoform only 20 per cent. had hyperidrosis, and not one case was of the very severe variety (where the skin between the toes becomes macerated, etc.). The tannoform, mixed with two parts of talcum, was applied by rubbing it in well between the toes and over the foot. The writer states it as his conviction that had the tannoform been applied more than three times the results would have been still better. He agrees with Dr. Karl Ullmann that the prophylactic treatment of hyperidrosis with tannoform must extend over a period of at least eight days; but then, he says, we may be certain that *for weeks to come* those so treated—at least the great majority—will not suffer with sweating of the feet. The best time to employ the tannoform is on going to bed. A preliminary footbath before each application is desirable, but not absolutely necessary. The bad odour of the feet disappears just as surely as the sweat itself. In not a single instance has the doctor noticed any disagreeable effects of any nature, and he considers the drug absolutely innocuous. Basing himself on his highly gratifying experience, the major in his report to the chief physician of the army made the following recommendation: "There is no doubt that in tannoform we possess an excellent, absolutely innocuous, remedy for the prevention, to a great extent, of hyperidrosis and sore feet in the army."—*Merz's Archives*.

THE services of Lieutenant-Colonel J. P. Greany, M. D., I M S, are placed temporarily at the disposal of the Government of India.

DR A. M. ELLIOTT, M. B., acts as Civil Surgeon of Bijapur.

BRIGADE SURGEON W. A. CRAWFORD ROE, I M S (retired), has been appointed Representative of the India Office on the War Office Advisory Board.

CAPTAIN J. C. ROBERTSON, I M S, Deputy Sanitary Commissioner, N. W. P. & O., accompanied Lieutenant-Colonel S. J. Thomson, C. I. E., I M S, to South Africa for Sanitary charge of the Boer Concentration Camps.

THE Government have agreed to the immediate organisation of some 14 Bearer Companies and to an increase in the establishment of Military Assistant-Surgeons.

LIEUTENANT S. A. RAZZAK, I M S, officiates in Medical Charge, 27th Madras Infantry.

CAPTAIN J. W. GRANT, M. B., I M S, is posted as Agency Surgeon, Muskat.

THE following Lieutenants are promoted to be Captains, I M S, viz—J. O. H. Leicester, H. Innes, W. S. Willmore, A. E. Walter, C. Hudson, L. T. R. Hutchinson, C. F. Weinman, H. M. Ciuddas, A. H. Fleming, E. L. Ward, J. N. Walker, V. H. Roberts, J. E. Robinson, G. King, T. S. Ross, G. P. T. Groube, P. P. Atal, W. H. Pearson and D. O. Kemp.

MAJOR C. H. MELVILLE, M. B., R. A. M. C., is appointed to be Sanitary Officer, Madras Command.

CAPTAIN W. LETHBRIDGE, I M S, General Hospital, Madras, was granted leave for 14 months and will return on 15th January 1903.

THE services of Captain A. Leventon, I M S, are placed permanently at disposal of Assam, and he is confirmed as Civil Surgeon of Sibsagar.

CAPTAIN D. W. SUTHERLAND, I M S, M. B., Professor of Materia Medica and Pathology, Lahore Medical College, is granted one year's furlough from 11th January 1902.

LIEUTENANT COLONEL A. H. C. DANE, M. D., I M S, Administrative Medical Officer in Central India, is granted 9 months' furlough (M. C.) under 1868 furlough rules.

LIEUTENANT COLONEL P. A. WEIR, I M S, M. B., is posted to Bhopal and acts as A. M. O., *vice* Lieutenant-Colonel Dane, I M S.

CAPTAIN B. G. SEFTON, I.M.S., acts as Personal Assistant to the P.M.O., Bengal Command, *vice* Captain J. G. Hulbert, I.M.S., granted leave

CAPTAIN W. H. ORR, I.M.S., was appointed District Medical Officer, Ahmedabad

MAJOR H. C. H. ARNIM, I.M.S., has taken over the duties of Deputy Sanitary Commissioner, Sind

MILITARY ASSISTANT SURGEON G. T. CARROLL is granted furlough out of India for 6 months

MAJOR J. GARVEY, I.M.S., is appointed *sub pro tem* Deputy Sanitary Commissioner, 1st Circle, N.W.P., and Captain G. T. Birdwood is posted to 2nd Circle

ASSISTANT SURGEON B. H. NANAVATTI, F.R.C.S., received charge of Ahmedabad Central Jail from Lieut. Stephen, I.M.S.

CAPTAIN J. M. BUIST, M.A.M.C., is confirmed in the appointment of Personal Assistant to the P.M.O., Punjab command

MAJOR J. J. PRATT, I.M.S., Civil Surgeon N.W.P. and Oudh, has been granted combined leave for a total period of one year two months and three days

DR S. M. VARIS (whose *Digest of Physiology* we recently reviewed) is appointed on temporary plague duty in N.W.P. and Oudh

DR E. J. SIMMONS, Uncovenanted Medical Service, N.W.P. and Oudh, is permitted to return to duty

THE services of Major R. J. Marks, I.M.S., Officiating Civil Surgeon, Mizapur, are placed at disposal of Home Department on his going on leave

THE services of Captain H. A. Smith, M.B., I.M.S., and Captain C. Milne, I.M.S., are placed permanently at the disposal of the N.W.P. and Oudh

MAJOR L. G. FISCHER, I.M.S., has resigned his commission in the Midland Railway Volunteer Rifles

CAPTAIN A. HOOTON, I.M.S., has been appointed Deputy Sanitary Commissioner, Gujrat Circle

MAJOR F. W. GIFF, I.M.S., 5th B.C., is granted seven months' extension of leave

MAJOR C. R. M. GRIFF, F.R.C.S. has been appointed Civil Surgeon of Simla, *vice* Lt. Col. Lukis, I.M.S. The last Civil Surgeon of Simla, who came from Bengal was Surgeon Lt. Col. Morehead, I.M.S., who retired some years ago and is now Lecturer on Tropical Diseases at Queen's College, Belfast.

LIEUTENANT COLONEL C. P. LUKIS, M.B., F.R.C.S., on leaving Simla has joined the Medical College, Calcutta, as Professor of Materia Medica and Clinical Medicine *vice* Lt. Col. C. F. A. Harris, I.M.S., who has gone on furlough. Lieutenant-Colonel Lukis was formerly Civil Surgeon of Naini Tal also. He has completed 22 years' service

IT is understood that when the time is up of Maj. W. Ronaldson Clarke, I.M.S., at Simla, he will be succeeded as Joint Civil Surgeon by Captain A. J. Macnab, F.R.C.S., I.M.S., now Medical Officer of the Corps of Guides

DR C. BANAS, Protector of Immigrants, Calcutta, is allowed combined leave for one year and eight months, and Dr W. Forsyth acts for him, while Dr Roy Macdonald acts for Dr Forsyth as Health Officer to the Port of Calcutta.

LIEUTENANT COLONEL R. CORB, I.M.S., is granted seven months' combined leave, and Captain C. J. Robertson Milne, I.M.S., from the Medical College succeeds him as Civil Surgeon of Backergunge

CAPTAIN T. H. DELANY, M.B., I.M.S., who has recently joined the Province, comes from Nadia to act for Capt. Robertson Milne as Resident Physician in the Medical College, Calcutta.

CAPT J. W. CORNWALL, I.M.S., is now acting as Professor of Hygiene and Practical Bacteriology, Madras Medical College while Capt. A. Millor, I.M.S., acts as Health Officer to the Municipality

THE following Madras Medical Officers in Civil employ were on leave on 1st February—Lt. Col. Allison, I.M.S., till 5th August 1902, Lt. Col. W. A. Lee, I.M.S., till 21st March 1903, Lt. Col. T. H. Pope returned on 18th February, and Lt. Col. F. O. Reeves, I.M.S., on 27th February, Lt. Col. A. J. O'Hara, I.M.S., returns on 4th July, Major F. J. Crawford on 26th February 1902, Major A. E. Grant, I.M.S., has got 10 months' leave and does not return till 4th September 1903, Capt. C. J. Fearnside returns on 11th October 1902, Capt. G. G. Gifford, I.M.S., on 2nd October 1902, Capt. Donovan, I.M.S., on 5th March 1902, and Capt. C. H. L. Palk on 2nd September 1902

THE address delivered at the Dublin Branch B.M.A. by Dr. C. B. Ball, Regius Professor of Surgery in the University of Dublin, contains many points of interest to service medical men. Dr. Ball is one of the Advisory Board of the War Office. He points out that the R.A.M.C. strength is now about 937, or a hundred more than when the War began, not counting civilians, but the figure does include 30 officers of the reserve and moreover resignations have largely ceased for the past couple of years. Of these 937 officers—

352 had Irish qualifications
305 had English "
221 had Scotch "
100 had qualification in more than one country
9 not yet found in the Directory

That the service is now not so popular as it once was in Ireland is shown by the fact that 75 per cent. of Surgeon Generals, 79 of Colonels and 48 per cent. of Lt. Colonels have Irish qualifications, whereas only 35 per cent. of Majors, 24 per cent. of Captains and 37 per cent. of Lieutenants got their qualification in Irish Universities or Colleges

THERAPEUTIC NOTES, &c

We have received specimens of Messrs Burroughs, Wellcome & Co's Tabloid Mercuric Iodide yellow (gr. $\frac{1}{2}$). This is a pure mercurous iodide and a definite chemical salt. It contains no free mercury. It remains stable in the tabloid form if protected from the light. We direct attention to the new announcements of the London School of Tropical Medicine in our advertising pages

Notice

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

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BOOKS, REPORTS, &c, RECEIVED

Lectures on Nervous System by F. Raymond, Paris (O. Doin & Co.)
Bacteriological Diagnosis of Mory (H. K. Lewis)
Walsh's X Rays in Medicine and Surgery, 3rd Ed. (Ballière, Tindall & Cox)
Nothangel's Encyclopaedia, Typhoid and Typhus. (W. B. Saunders & Co.)
Central India Administration Reports
Gujarat Administration Reports
Giles' Gnats and Mosquitoes, 2nd Ed. (T. Bale Sons and Danielsson)

COMMUNICATIONS RECEIVED FROM —

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THE
Indian Medical Gazette

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OUR SPECIAL MEDICO LEGAL NUMBER

"If the medico-legal experience acquired by each medical officer who has held civil office in India since the British occupation had been continuously fixed, and the results of their experience all arranged, compared, and generalised, a magnificent body of ethnological and medico-legal science of vast practical utility would now exist, which has passed away irretrievably"

KENNETH MCLEOD, 1871

ENCOURAGED by the success which has attended the issue of special numbers on Stone (August 1900) and on Cataract (June 1901) we this year present to our readers a special number devoted to Medical Jurisprudence or Legal Medicine, a subject which, like Stone or Cataract, every medical officer in India is necessarily interested in, and one in which many of them have acquired special, and in some cases unique, experience

All of us who have worked in India know well that the medico-legal aspects of crime differ in many particulars from that of European countries, and hence one does not work long in the country before finding that one has to unlearn much and add more to the experience acquired in Europe or from text-books based upon European experience

We have not of course been able to deal with the whole question of Indian Medical Jurisprudence, but have only dealt with certain aspects of the subject. The questions of poisoning, rupture of the spleen, *lathi* blows, are fully discussed. Lieutenant-Colonel Crawford's paper on rupture of the spleen, based on such a large number of cases, will long remain a standard reference on this important subject. The paper by Captain Robertson-Milne on the cases of poisoning treated at the Medical College Hospital, Calcutta, shows at once the commonness and the variety of methods of poisoning in that city. Major Bedford's valuable paper shows one side of the work of the Chemical Examiner's Department. The excellent paper by Assistant-Surgeon Purna Chander Singh, of the Temple Medical School at Patna, contains much of value, especially his observations and experiments on the length of time the food used by natives of India may remain in the stomach, a point which may be of vital importance in a case, as it was for example in a once famous *cause célèbre* in Calcutta

(*Imp v Sudhabode*, see *Indian Medical Gazette*, 1889, p 33) Captain Ewen's paper on Insanity in murder cases touches upon the great question of responsibility, and we hope that now that Central Asylums in India are being put into the hands of specialist medical officers that many more such studies will be made in them. The two papers on *lathi* blows are of great interest and worthy of the attention of the judicial authorities in India, special attention may also be directed to the many interesting questions raised in Dr Powell's paper.

During the 37 years of its existence the columns of the *Indian Medical Gazette* have contained many valuable articles on medico-legal subjects, several of which have been republished by their authors in book form.

Foremost among the works which deal specially with Medical Jurisprudence in India is the well-known classic, Norman Chevers' *Medical Jurisprudence*. This volume was first published by Norman Chevers when a Professor at the Medical College, Calcutta, in the sixties, but was revised, and the Third Edition published in 1870 by Messrs Thacker, Spink & Co. This is the edition which was officially circulated to Government offices, and is still to be found in the office library of the Magistrate in most districts. It is a perfect mine of information on all subjects, and is based upon an exhaustive study of the Nizamut Adawlut Reports for many years. It is also a most entertaining book to read, and the Civil Surgeon, who thinks he has got a rare case, will do well to consult Chevers' volume before he proclaims the fact.

About the time that Chevers' third edition appeared Dr Munay, Inspector-General of Hospitals, issued a circular remarking upon the great amount of medico-legal experience annually lost in India and calling for copies of all reports on subsequent cases with a view to their analysis and future use. The returns for part of the year 1868 for Upper India, and for 1869 for the whole of the Bengal Presidency, were collected, and their analysis entrusted to Kenneth McLeod, then a young Civil Surgeon in Bengal, now Professor of Military Medicine at Netley. His admirable report was published as an appendix to the No 2 General Report of the Dispensaries, &c, of the Bengal Presidency. This report is now, we are sorry to say, very difficult to obtain.

It was followed in 1876 by the publication in the columns of the *Indian Medical Gazette*

of Robert Harvey's "Report on the Medico-legal returns received from the Civil Surgeons in the Bengal Presidency during the years 1870, 1871, and 1872" In this report young Robert Harvey gave indication of the ability which led in after years to his being Director-General of the Indian Medical Service The papers were afterwards reprinted, and form a small closely printed volume, published in Calcutta by the Calcutta Central Press Co in 1876 This little volume is also now rarely obtainable It consists of 330 pages, and is based upon an examination and analysis of no less than 31,310 medico-legal cases, including the 3,319 analysed by K McLeod A glance at the table of contents will show the completeness of this little volume, which well deserves to be reprinted The subjects dealt with include the following (to mention only a few)—Decomposition, blunt weapons, injuries to skull and brain, injuries to face, neck, spine, and thorax, injuries of abdominal viscera, rupture of spleen, cases of neglect or malpractice injuries by pulling out of ornaments, by wheels or conveyances, by ropes or cords, torture, cut throat, hacking, stabbing, alleged snake-bite, gunshots, arrow wounds, rape, sodomy, suffocation, *samadh* or leper burial, hanging, drowning, well cases, poisonings, infanticide, &c., &c All the subjects were fully dealt with and illustrated by actual reported cases Such a valuable little volume deserves to be rescued from oblivion

The above are the chief medico legal records which we are aware of, and they belong to a period of thirty years ago

In more recent times other books on Medical Jurisprudence have appeared, in some of which large use has been made of the work of Chevers, K McLeod and Harvey The first of these is a little volume entitled "Medico-legal Experiences in Calcutta" published at Edinburgh in 1891 (E & S. Livingstone), by the late Dr S. Coull Mackenzie, F.R.C.S (Edin), Police Surgeon of Calcutta and Superintendent of the Campbell Medical School It consist of a series of papers originally published in the *Indian Medical Gazette* in the years 1888 and 1890, and has the following contents—(1) Phenomena occurring after death—a unique and valuable series of observations on cadaveric phenomena, then (2) comes the famous eight cases of saponification, (3) then 305 cases of drowning, (4) 130 cases of hanging, (5) three cases of strangulation, (6) a case of throttling, (7) thirteen sud-

den deaths from suffocation, (8) 111 cases of rupture of internal organs, and (9) a case of rupture of the right phrenic nerve followed by instantaneous death

After this the next Indian publication was the well-known Lyon's *Medical Jurisprudence for India*, of which two editions were rapidly produced between 1888 and 1890 This very admirable volume has been the standby of the Civil Surgeon in India for the past decade It was written by Brigade-Surgeon B Lyon, C.I.E., F.C.S., F.I.C., the Professor of Chemistry in the Grant Medical College, Bombay The second edition has been long out of print, and to meet the continued calls for it some time ago the publishers (Messrs Thacker, Spink & Co.) entrusted a third edition to Lieutenant-Colonel L A Waddell, C.I.E., LL.D., I.M.S., and we understand that the new edition is now in the press and will appear in the autumn Another very useful volume on the same subject is Hahn and Gibble's *Medical Jurisprudence* It is especially useful to lawyers and medical subordinates, as it is simply and clearly written and fully explains the meaning of all technical words used

The last book which we have to refer to is the just published volume on Legal Medicine, by Major Collis Barry, I.M.S., the Professor of Medical Jurisprudence in the Bombay Medical College, and Chemical Analyst to the Government of Bombay, which we have only just received and intend to review fully in our next issue

NOTES OF SOME TOXICOLOGICAL EXPERIENCES IN BENGAL AND IN THE PUNJAB

By C H BEDFORD, D.Sc., M.D (Edin),

MAJOR, I.M.S.,

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Preliminary Remarks.

It may safely be asserted that no country in the world furnishes anything like the amount of toxicological material that India does. Of course this does not necessarily imply a relatively greater prevalence of crime by means of poison than in other countries when the enormous population of India is taken into account But, nevertheless, there are many reasons for supposing that murder by poisoning is more acceptable than more violent methods to the Indian

murderer. There is much reason to believe that only a small proportion of the crimes effected by means of poison in India come to police notice. This is hardly a matter for wonder when one bears in mind the domestic and social conditions which obtain throughout India, for instance the facilities for crime offered by the strictly secluded life of the zenana, the dead most natives have of invoking the aid of the investigations of the native police, the absence (except in Presidency towns) of anything approaching death-registration and of coroner's inquests, the ignorance and unreliability of the native quacks who are called on in so many cases to treat cases of disease—in a word, the semi-civilized (or, in wide tracts of India, the totally uncivilized) conditions of life which obtain. *Per contra*, police supervision would appear to be yearly becoming more efficient if one may judge of this by the steadily increasing number of cases referred to Chemical Examiners. Caution is necessary in accepting such a conclusion, however, as the increase may be partly due to a desire on the part of a section of medical and police officials to shift the responsibility of deciding as to the cause of death in any particular case on the Chemical Examiner. In former years there is to be observed a marked increase of such crimes as robbery by violence, drugging, etc.

The relative prevalence in the different Indian provinces in 1900—the last period for which complete returns are available—is shown by the following figures—

	Total Number of Medico legal analyses	Total Number of analyses other than Medico legal.	Grand total
Bengal	2,084	2,247	4,331
Punjab	3,846	429	4,275
Bombay	1,613	2,305	3,918
Madras	1,383	729	2,112
Burma	243	1,630	1,873
U P of Agra & Oudh	1,003	733	1,736

As illustrating the fluctuations in the number of such references to my office the following figures are of interest—

Year	Total Number of analyses M. L. & general	Total Number of M. L. articles examined	Total Number of M. L. cases submitted	Decrease (—) or increase (+) in M. L. articles.	Decrease (—) or increase (+) in M. L. cases
1894	2,940	1,451	787	—170	
1895	3,342	1,644	829	+193	+42
1896	3,655	1,732	952	+88	+123
1897	4,518	2,549	1,376	+817	+424
1898	4,376	2,266	1,006	—283	—370
1899	4,105	1,977	986	—289	—20
1900	4,331	2,084	1,160	+107	+167
1901	4,878	2,520	1,270	+436	+120

Poisons Employed

The chief poisons used are arsenic for homicide, opium for infanticide and suicide, and *datura* for drugging in order to rob, and aconite, strychnia, yellow oleander, Indian hemp, atropine, mercury, prussic acid, etc., are much more rarely employed. Poisons of indigenous origin also occasionally used are the root-bark of *Calotropis Gigantea* (for suicide, infanticide and abortion), the juice of which is known as *ak* or *madār*, *Nerium odoratum* leaves, which act as a cardiac and spinal poison—known as *Kanēr*, the fruit of *Terminalia Bellelica* (narcotico-irritant), while marking nuts (the drupes of *Semecarpus anacardium*) and the roots and twigs of *Plumbago rosea* (known as *lal chitra*) are favourite abortifacients. I have no special observations to offer as to these. In Bengal, opium ranks first in frequency,—in 1901, furnishing 23.79 per cent of the total number of cases of fatal human poisoning.

Arsenic

White arsenic ("arsenious acid") is the form most frequently employed for homicide, and its selection is due to its tastelessness, lack of odour, and the fact that its colour blends with the prevailing tint of many native foods and further to the fact that in cooking it undergoes no change except one much to be desired by the poisoner—increased solubility. Another very important point is the certainty of its action and its consequent popular repute, as well as the ease with which it can be procured in almost any bazaar, and moreover the fact that, as it is used for so many domestic purposes in India, its possession does not necessarily afford a strong presumption of guilt. The yellow variety ("orpiment") is less seldom used, and the red "realgar" very rarely, though in cases in which white arsenic has been given yellow and even red arsenic may be found in the stomach and intestines from conversion of the trioxide into the form of the tri- or di-sulphide.

While the onset of symptoms in arsenic poisoning is generally in about 20 minutes, yet one gets very many variations which may range from immediateness to even fourteen hours or so after administration.

While I have known death supervene within half an hour from shock when enormous doses have been given, yet, on the other hand, it may be delayed in the case of administration of a single lethal dose to nine days. The average period of death is generally 18 to 20 hours, and I compute that about 82 per cent die within 24 hours of administration.

Motives in Arsenic Poisoning Cases.

A large number of cases are husband poisoning, generally in order to facilitate intrigues with other men. The husband, however, in many

cases "frustrates their knavish tricks" by giving a suspiciously tasting portion of his meal to the family dog, whose discernment in such matters is generally less, and who suffers in consequence.

The accused wife in many such cases, and with apparently no desire to appear flippant or humorous, alleges that her object in administering arsenic to her husband is as a "love philtre" in order to regain his waning affections. Such cases would almost lead one to an understanding of Strabo's statement that natives of India defended and explained the custom of "suttee" by its deterrent action as regards husband-poisoning, as this involved wife-burning as a necessary sequence. The objection to this explanation appears to be that, in any case, when the husband died either by poison or in the course of nature, the widow would be burnt, and that to hasten the event by poisoning him would hardly further the happiness of the faithless wife.

Other motives are illustrated by the following cases —

A slighted lover persuaded a female friend of the object of his affections to poison her food with arsenic. In such cases the motive would appear to be injured *amour propre*, and the consequent desire to show the lady and her chosen swain that the despised lover is by no means harmless.

Another case that was referred to me while Chemical Examiner for the Punjab, was that in which a native mission school student, aged 18, had poisoned with arsenic the food of another youth who had supplanted him in the (sodomic) "affections" of a school-fellow. As a result ten lads were poisoned, four fatally. The sentence in this case was ten years' imprisonment and a fine of twenty-five rupees, surely an easy expiation for the heaper of such a holocaust.

Another curious case came from the Dharmasala District where a custom exists of using human ashes as a philtre to subject (for commercial or sexual purposes, according to the requirements of the moment apparently) the partaker to the giver. Here A who wished to influence B favourably over a land dispute which existed between them gave the latter's servant what A stated to be only human ashes and bribed him to mix it with B's food. In order, no doubt, to make the effect more permanent and reliable, A took the precaution of mixing with the ashes a fatal dose of white arsenic with the view of limiting B's interest in land to that quantity required for his own strictly personal uses,—for interment. However, this "best laid scheme" was destined to "gang aglee" for the servant relented and confessed the plot. This is one view of the case, but to any one well acquainted with Indian criminal ways the possibility of a trumped up charge is always borne in mind, and it is possible that B bribed his servant to say that A had given him the packet to mix with his master's food in order that A's active opposition to B's land policy might be removed, or at

least postponed, to a more convenient season. In this case the particles of white arsenic matched in colour and size the calcined fragments of bone exceedingly well at first sight.

In another case a wife was poisoned by her husband's mistress, whom he had brought to live in the same house with his wife.

Again, a man who wished to poison an enemy feasted the whole village with sweetmeats, reserving a poisoned portion for the destined victim. The poisoner thus hoped to enlist a large body of evidence as to the wholly pleasing and innocuous character of the sweetmeats, and he expressed great surprise and concern at the unaccountable way in which his enemy had been affected. A conviction was obtained in this case.

Another case from my experience as Punjab Chemical Examiner illustrates well certain "customs of the country" of considerable medico-legal interest. There were sent to me the stomach and portions of the liver of a woman who had died in the "Lock-up" by, the police stated, suicide. The stomach was distended with a white flocculent liquid and contained six drachms of yellow arsenic (there were lumps weighing 80 and 43 grains and two weighing each 50 grains). Its mucosa was pale except for a very small patch of congestion at its pyloric end. Death took place from shock. Arsenic was also detected in the portion of liver sent. It was evident from the *post-mortem* appearances that the woman had been tortured by the native police (with the object of extracting evidence from her, or money from her relatives, or for some other reason) by beating on the calves, buttocks and thighs with the hand or a slipper, and by forcing sticks up the vagina and rectum. The police alleged that the bruising was due to a fall from a ladder, but this was manifestly untrue from the nature of the marks and injuries on the body. The police gave as the motive for suicide the following curious explanation — When arrested, they said, the woman had arsenic and lime in her possession for use as depilatories, and as prostitutes use these more than respectable women, she was so covered with confusion by the discovery that she poisoned herself with the arsenic! All the probabilities pointed to the woman having had arsenic smuggled into the "Lock-up" and having committed suicide in order to escape further torture. The case was found "not proven" against the police.

Arsenic is used in certain cases to poison in order to rob, and suicide and abortion are other uses for this poison.

Arsenic may be administered in very various "vehicles"—bread, flour, meat, sugar, vegetables, water, milk, &c.

Specially Noteworthy Facts

In arsenic poisoning where, in the rare cases in which death from shock has resulted, the stomach

may not only show no signs of congestion but may contain a large quantity of solid and liquid contents, as vomiting may never have occurred. It is further of great importance to note that in many cases of very rapid death from arsenic (say within a couple of hours) the stomach may show no abnormal signs. It would appear in general that for congestive changes of sufficient intensity to persist after death an exposure of the mucosa to the action of the irritant for about two hours is in most cases requisite, though exceptions to this rule may occur.

Endocardial lividity which Tardieu considered was in direct ratio to the amount of gastric congestion in arsenic poisoning should always be looked for at the autopsy. It is a sign of importance and interest, and more facts regarding its occurrence and exact significance should be accumulated and recorded.

There is generally a misconception regarding the delay of the decomposition of the tissues generally in cases of arsenic poisoning. The stomach and intestines are generally well preserved, but in other organs and tissues decomposition is (at least in India) as rapid as in death from most other causes.

The fact just referred to that vomiting and purging may in very rare instances be absent in arsenic cases is one of the utmost interest and importance.

The following case is an example of the so-called "nervous type" of arsenic case. A man, aged 30, to whom a poisonous dose of arsenic had been given, suffered from thirst, giddiness, faintness, slight gastric pain, followed by coma with deeply suffused conjunctivæ, no vomiting or purging, and recovered.

In another case all the usual irritant symptoms occurred except purging.

Other cases of interest are the following — A child, three months old, was given 12 grains of arsenious acid, and suffered from persistent vomiting and intense conjunctival suffusion for six days, but recovered.

Another case occurred in which vomiting and purging were absent, and death occurred within three hours.

In another case all symptoms were delayed for 14 hours after administration, — (sleep, opium, etc., may delay the onset of the symptoms, but these causes were absent in this case).

Again, a man was found dead with a scalp wound leading down to a fracture of the vault, but the injured parts showed no signs of vital reaction, arsenic in lethal amount was found in the stomach, liver and in the small intestines, here the arsenic was the cause of death, and the injuries were inflicted, *post-mortem*, probably to draw off attention from the real cause of death.

Cases of homicidal poisoning by arsenic and mercury are not uncommon, and occasionally

accidental deaths, *e.g.*, from quack remedies, are referred to the Chemical Examiner.

Perforation of the stomach is of very rare occurrence in arsenical poisoning. A case was sent from Sylhet last year, in which the stomach mucosa showed white patches of arsenic and intense congestion, sub-mucous hæmorrhages and softening, and in which one perforation had taken place. The history sent with the case was so scanty as to make it impossible for me to positively decide whether the perforation had resulted from antecedent ulceration or was due to the arsenic.

A case occurred in 1900 in which a prostitute was murdered by means of yellow arsenic, the door of the room in which she was found being locked from the outside and her jewellery having been stolen. Prostitute-robbing is in India one of the commonest forms of crime, but poisoning by arsenic in such cases is very rare, datuina or opium being the ordinary agents employed.

Mercury salts are frequently used for homicidal purposes, but a large number of accidental cases occur especially from its use as a domestic or quack remedy, and through mistakes brought about by *banias* storing articles of food side by side with drugs and occasionally mixing up the bottles. Metallic mercury is often used under the erroneous impression that it is poisonous, and several cases of the kind have been referred to me during the past two years.

Aconite, strychnine and croton oil are all largely used as constituents of quack medicines, and frequent fatal accidents occur in consequence. They are also used occasionally as homicidal agents. An accidental case of strychnine poisoning occurred last year from the use of bottled "Lemon Squash," which was found to contain strychnine. I have had several cases referred to me in which *strychnine had been given by mistake for santonin, and samples of santonin have occasionally been found to contain strychnine*.

Prussic acid is mostly employed for suicidal purposes, and the cases referred to me have occurred principally among students and clerks.

Opium is of course the favourite poison for suicidal purposes and for infanticide, but accidental poisoning from its employment in quack remedies is somewhat common. Recently a case of prostitute-robbing by means of opium as well as two cases of attempted homicide by its means were referred to me. It is, curiously enough, comparatively rare for cases of attempts at adult murder or drugging by opium to be referred to Indian Chemical Examiners.

I had a case referred to me, when in the Punjab, of compound poisoning by means of opium and croton in which though *seven grains* of opium had been given along with the croton the symptoms produced by the croton were as severe as if it had been given alone. Again in 1894 I had referred to me six cases of homicide by opium —

husband poisoned by wife and paramour, old man poisoned by relatives, as he was growing peevish and troublesome to them, wife-poisoning in which the husband forcibly administered opium to his wife and then took her to hospital for treatment so as to avert suspicion from himself in case she died, husband, suffering from double pneumonia, poisoned by wife, man poisoned from motives of revenge, two cases

Aconite and opium—Another Punjab case showed the following train of symptoms Bitter taste, "constriction of throat" sensation, giddiness, vomited thrice, tingling "confined to the nape of the neck," gastric pain, twice purged, syncope alternating with great restlessness, paresis of limbs, coma, convulsions, death

In many cases in India opium is taken to promote easy death before suicide by hanging or drowning. The domestic use of opium is a circumstance which greatly complicates certain cases of alleged poisoning by its means

Strychnia bark or seeds are frequently given by mistake in place of, or along with, other native medicines. There is a drug named "*Lurchi*" (*Wrightia anti-dysenterica*), whose bark is used by the natives as a tonic, astringent and mild anti-periodic (especially for children), and fatal accidents have frequently occurred by mixing this bark with the bark of *strychnos nux vomica*. In some cases the police have seized, in shops in the bazar, quantities of "*Lurchi*" bark, mixed with *strychnos* bark. Tetanus is an extremely common disease in Calcutta, and having regard to the resemblance of many of its symptoms to those of *strychnia* poisoning, it is not unlikely that advantage is occasionally taken of the fact to poison by *strychnia*, and then ascribe the death to tetanus, just as is so often done in the case of cholera and arsenic. The possibility is one at least to be borne in mind

Datura is the favourite agent employed in robbery by drugging. The "poisoning thugs" or "Dhaturias" appear to have succeeded the "Phansigais" or "strangling thugs" who employed a "*rumal*" or handkerchief with which to strangle their victims as they sat at food. In general, natives appear to regard *datura* as an intoxicant and narcotic, rather than as a lethal agent. The dose necessary to produce narcosis is frequently over-estimated, even by professional road-robbers, and the cases of death which occur are generally due to this rather than to any deliberate intention to kill. The *datura* plant is found growing in most parts of India and so the poison is readily procurable. The seeds have the further advantage for administration of closely resembling capsicum seeds which are so frequently used by natives in their food as a condiment. *Datura* is, further, almost tasteless

In about half an hour the victim becomes delirious and then insensible, in which latter condition he may remain for several days, thus

allowing plenty of time for the thieves' escape. Greatly impaired memory is another symptom which operates in the thieves' favour by baffling any efforts of the police to obtain timely information which might lead to the thieves' identification. *Datura* is administered in such vehicles as bread, *dal*, *gur*, cakes, and along with tobacco or even Indian hemp. In many cases whole seeds are mixed with the food, but more usually the seeds are powdered* and occasionally fragments of the leaves are given. *Datura fastuosa* and *Datura alba* are the varieties most employed. If a decoction of the seeds be given the onset of symptoms is very rapid—generally within five minutes. With the seeds, whole or powdered, or leaves, the symptoms ordinarily appear in about half an hour.

I remember one case in the Punjab, in which the victim was poisoned by *datura* given in a mess of mushrooms and cooked meat, and in defence mushroom poisoning was advanced as the cause of the symptoms. Unluckily for this plea, I found whole seeds of *datura* in the victim's vomit as well as in the uneaten remains of the food, and some fresh mushrooms alleged by the defence to be identical with those of which the victim had partaken were found by me to be non-poisonous.

Last year several cases of poisoning by a gang of druggers were referred to me. They had occurred at Bankipur and Patna railway stations. The police arrested a railway constable on duty at Howrah terminus, and packets containing *datura* in one case, and arsenic and calomel in the other were found on his person and in his house. This man was one of a gang of druggers who had poisoned three men at the above-mentioned stations. Another man was poisoned by *datura* given to him in some parched grain by a fellow passenger.

Last year, at Dinajpur, two shoe-makers partook of some curd, rice and tobacco in the company of three professional druggers, who later decamped with all the valuables found on their victims, one of whom died from the effects of the *datura*.

Datura and hemp were given together in one non-fatal case which I had in the Punjab. Forty-five minutes after eating a poisoned mixture of flour, sugar and ghee, the patient became faint, giddy, complained of headache, had paresis of the limbs and then became insensible, vomiting purging, and searching movements with the hands were also noticed. This was also a case of drugging to facilitate robbery.

Cannabis Indica is occasionally employed in cases of robbery by drugging, but comparatively seldom with fatal results.

I understand that the Editor has made a *précis* of a paper on **criminal abortion** in

* I find that the testa of the *Datura* seed presents quite distinctive microscopic appearances. It is curious that no reference to this is made in any hitherto published work on Medical Jurisprudence.

India contributed by me some years ago to the *Edinburgh Obstetrical Society's Transactions*, and so I need not refer to that subject further here

A very large number of *blood and semen stains* are referred every year to my office in connection with murder, rape, etc., cases, and I may conclude these brief notes by referring to a recent case of interest in connection with what was known as the "Bengal Club murder case." In this case, which occurred at night, on the premises of the Bengal Club, Calcutta, blood stains on a garment belonging to the accused were found by me and by my Head Assistant to contain the embryos of *filaria sanguinis hominis*. I then asked the police to send me some articles known to be stained with the deceased's blood, and accordingly a pillow was sent which had been found under the murdered man's head. The blood found on this pillow also contained the *filaria* embryo, thus furnishing a link which considerably helped to lead to the conviction of the murderer.

Cattle-poisoning for the sake of the hides is an exceedingly common crime in India. The agents chiefly employed are arsenic, strychnine, and needles composed of, or smeared with, jequity (*Abius precatorius*), which latter are driven into the skin and left there, causing death in less than a couple of days in most cases. Several other poisons are also employed for this purpose, but the subject is probably not of sufficient general interest to warrant further remarks here.

THE FREQUENCY OF POISONING IN CALCUTTA, WITH SOME ILLUSTRATIVE CASES

By C. I. ROBERTSON MILNE, M.B. (ABER.),

CAPTAIN, I.M.S.

At probably few hospitals in the world are so many cases of poisoning seen as at the Medical College of Calcutta. The causes of this, such as the absence of any restriction on the sale of certain deleterious drugs, &c., do not require any further publicity, for they are well known, and the subject is one which bristles over with more difficulties in the way of legislation than some would have us imagine.

In 1900 one hundred and forty-eight patients suffering from symptoms of poisoning were admitted into the hospital, and in 1901 one hundred and forty-five. Cases of acute alcoholism are only included when the patient was brought up in a more or less unconscious condition, and required immediate and radical treatment. Ordinary inebriates are excluded.

The following tables show the general statistics of age, sex and race in each year, classified according to the several drugs employed. The mortality from each drug is also noted.

General Statistics, 1900

Drug	No of cases	SEX		AGE		RACE				Mortality
		M	F	Below 12	Above 12	Hindu	Mahomedan	European	Other races	
Opium	70	44	35	8	71	65	9	4	1*	37
Alcohol	38	36	2	0	38	20	9	8	1†	
Kerosene oil	6	5	1	6		3	2	1		
Turpentine	1		1	1		1				
Camphor	2	1	1		2		1	1		
Carbolic acid	2	1	1	1	1	1		1		
Belladonna	4	1	3		4	3		1		
Cresote	1		1		1			1		
Cannabis Indica	1	1			1	1				
Strychnine	2	2			2	1		1		
Arsenic	4	2	2		3	3				4
Datura	3	2	1		4	2	1			
Ptomaine	3	3			3	3				
Hydrochloric acid	1	1			1	1				
Irritant (?)‡	1	1			1	1				
	148	100	48	16	132	105	23	18	2	42

* Native Christian

† Do do

‡ Nature never ascertained, * Arsenic

General Statistics, 1901

Drug	No of cases	SEX		AGE		RACE				Mortality
		M	F	Below 12	Above 12	Hindu	Mahomedan	European	Other races	
Opium	86	53	33	7	79	68	4	11	3*	34
Alcohol	22	20	2		22	16	1	5		
Kerosene oil	9	7	2	9		6	2	1		1
Carbon monoxide	1	1			1	1				
Sulphuric acid	1	1			1				1†	
Camphor	2	1	1	1	1	2				
Nitric acid	1	1			1	1				1
Datura	3	2	1	1	2	2	1			
Aconite	3	3			3	3				
Ptomaine	1	1		1				1		
Arsenic	4	2	2	1	3	3	1			1
Irritant (?)‡	2	2			2	2	2			
Sewer gas	2	2			2	2				
Carbolic acid	2	2		2		2				
Belladonna	2	1	1		2	1		1		
Cannabis Indica	2	2			2	2				
Chloroform	1	1		1		1				
Iodine	1	1		1		1				
	145	102	43	23	122	111	11	19	4	37

* 1 Jew, 1 Christian, 1 Native Christian

† Parsee

‡ Nature not ascertained

Opium—Opium, as will be seen, accounts for considerably the largest proportion of the cases. Taking the two years together there were 165 patients showing symptoms of this drug, leaving 128 to be otherwise accounted for. The large number of women is explained by the fact that they were mostly of the *demi-monde*, mistresses who had been deserted by their lovers, and who consequently attempted suicide in this manner. The fifteen children represented in this category were, with one or two exceptions, purely accidental cases.

The patients were brought to the hospital in every possible stage of the condition—from shortly after inception to that of being entered in the hospital books as "moribund." Five or six that I can remember died before treatment could be instituted. As a rule the patient was thoroughly, unconscious, with pinhole pupils, stertorous respiration, and small feeble pulse. If the respirations were below 10 per minute artificial respiration was first tried and carried on until lavage of the stomach could be safely performed.

The general treatment laid down for all cases was that the stomach pump should be used first, and emetics were not to be given except in very mild cases, and then in children chiefly. Their routine employment was disapproved. Cases came so frequently that we always had everything out ready in a special emergency room for the purpose. After lavage the patient was treated on general principles. The respirations were carefully watched and artificial methods (Sylvester's chiefly) were at once commenced if any sign of failure became apparent. Artificial respiration had frequently to be carried on for a considerable time. In one case, that of a muscular European female, it was maintained continuously for six hours by relays of students. The result was successful.

The mortality shows 70 deaths and 95 recoveries—a death-rate of 42.5 per cent. This very high percentage can only be explained by saying that most of the cases were determined suicides, who took large doses late at night and were found in their rooms in the morning, when it was generally too late to revive them.

The dose taken could never be accurately ascertained. In all but one case, in which Tinct. Opium was used, the ordinary crude opium sold in the bazaar was the variety consumed.

The following is a typical fatal case—

G. B. G., Hindu male, aged 25 years, was admitted into hospital at 1.45 A.M. on the 5th of February 1901. His friends stated that he was found in his room in an unconscious condition and brought to hospital.

On admission—Unconscious. Pupils pinhole. No conjunctival reflex. Pulse 120, fairly full, respirations 4.

Treatment—Artificial respiration for a time until the breathing improved. Then lavage with permanganate solution. Liquor Atropini m and Liquor Stychni m 5 hypodermically.

2.35 A.M.—I saw the patient, who was in much the same condition. Artificial respiration was being continued. Atropine and Stychnine injection repeated.

4.30 A.M.—Respirations 3, pulse 125. Unconscious.

5.30 A.M.—Respirations 6, Pulse 120. Partially conscious for a short time, but rapidly relapsed into a comatose state and died at 6.10 A.M.

With regard to Atropine, which was used in the above case and which has been much vaunted as a specific antidote, I may say that I have pushed it in the prescribed doses in several cases without any marked result. Moreover, in criminal cases such as these mostly were, one has to be very careful about introducing another poison into the matter.

Finally, in connection with opium, the patient's temperature ought to be taken. In opium poisoning the temperature is generally subnormal, whereas in pontine hæmorrhage, which presents similar symptoms, the temperature is high and rises steadily until death ensues. We had one case where we suspected pontine hæmorrhage, and although no lesion was found *post mortem*, neither was any opium found in the stomach washings or in the body, and the case remains unexplained.

Alcohol.—The number of instances of alcoholism among Hindus is no doubt somewhat surprising, but most of them belonged to the very lowest castes—domes and the like. Native liquors of sorts were commonly imbibed. In one case detailed herewith brandy was taken.

18th June 1900—Sureshmani, Hindu male, aged 30. Patient brought to hospital by employer who states that the man drank a pint bottle of French brandy, for a wager, about 9 A.M., and shortly afterwards became unconscious.

Condition on admission—A well-built muscular man, absolutely unconscious. Pulse 70, moderately full, respirations 38, shallow, pupils dilated. No marks of injury.

Treatment—Stomach pump at once and a large quantity of an alcoholic fluid evacuated, which had the odour of brandy, 5 minims of Liquor Stychni given hypodermically. Patient fell into a deep sleep, from which he awoke towards evening. Discharged cured on 19th.

Kerosene Oil.—There were no less than fifteen instances of this substance being taken, and in one the result was fatal. I was warned on coming to the College by my predecessor, Major Drury, that a sudden fatal termination in such cases might occur, being due to cardiac failure, and as is detailed below, I met with one such experience.

The frequency of this "poison" is due to the circumstance that poor people buy kerosene in very small quantities and it is left lying about in their meagrely furnished huts in open vessels. Any child, in the absence of parental supervision, will grab about a room on its own account and if they are hungry or thirsty, will take anything that it may happen to reach. Such is the explanation of all the kerosene cases, of seven of the opium ones, of three of those attributed to carbolic acid, and of one each of camphor, turpentine, iodine and arsenic. The children in all these were below the age of three.

Symptoms of kerosene poisoning—Irritant vomiting followed by signs of collapse, chiefly circulatory. Odour of the breath markedly that of kerosene.

Treatment—The stomach should be washed out with warm water, an ordinary soft rubber male catheter being employed instead of the ordinary tube which is too large. Other treatment is mainly symptomatic. The child should be kept under observation for at least twelve hours and the possibility of a sudden fatal issue never lost sight of.

Cases—1 A K, Hindu male, aged 18 months, brought to hospital at 4-40 P.M., on the 11th of April 1901, with the history that the child had drunk some kerosene oil an hour previously. He vomited several times at home.

Condition on Admission—Child is somewhat collapsed. Extremities cold. Pulse 62, very feeble. Respirations 32, laboured.

Treatment—Stomach washed out with warm water and the child was then wrapped up in warm blankets. Later, warm milk was given. 7 P.M., child had thoroughly recovered. Pulse 132, respirations 35. Child discharged cured on morning of 12th.

2 K A, Hindu male, aged 20 months, brought to hospital about 5 P.M., on the 8th of July 1901, in an unconscious condition. Said to have drunk a quantity of kerosene oil from a lamp about two hours previously and to have vomited ten times at home.

On admission—Patient collapsed, unconscious. Pulse feeble, rapid, 150, respirations 54, abdomen distended.

Treatment—Stomach washed out with warm water. Washings clear and possessed distinct odour of kerosene. Patient recovered consciousness after this procedure. Stimulants were given freely and the general condition showed at 7 P.M. slight improvement. A small dose of castor oil was then administered. Later in the night the child relapsed into a semi-conscious state, the circulation continuing to be of the feeblest character despite stimulation. At 7 A.M. on the morning of the 9th the child was no better and treatment was continued. At 9-20 A.M. the child died very suddenly, having had an evacuation of the bowels a short time previously. The stomach washings contained no opium or any other substance. The *post-mortem* revealed no lesion which could have otherwise explained the condition and the death.

Arsenic—This was the drug used in eight cases, but in some of the "irritant" ones, in which the active ingredient was not ascertained, arsenic was doubtless the substance employed. In five of the instances a fatal result ensued—a mortality of 62 per cent. The three patients who recovered had exceedingly mild attacks, having taken small doses accidentally. They included one infant who swallowed some yellow arsenic and was brought to the hospital at once. She recovered

completely in a couple of hours. The notes of two fatal cases are appended.

1 A Hindu female, aged 18, was brought into hospital on the evening of the 1st of February 1900 by her friends, who stated that at 7 P.M., she had taken 50 grains of "harital" (orpiment—yellow sulphide of arsenic) for a headache (?). Prior to admission she had vomited several times and had been purged once.

Seen at 9 P.M. patient is perfectly conscious and complains of pain in the epigastric region, of thirst and of a burning sensation in the throat. Face pale, anxious, extremities cold, condition of choleraic collapse. Pulse thready, 130. Respirations, slightly laboured, 37. Vomiting constantly. Vomit consists of yellowish matter not tinged with blood. No jaundice, no dysuria. Extreme restlessness.

Treatment—Stomach washed out carefully with plain water. Liquor ferri dialysatus and egg albumen given, but both rejected. Ether and strychnine given hypodermically, after which pulse improved slightly. Vomiting and purging continued. Nothing retained by the stomach. Pulse failed again on morning of 2nd and did not recover after further hypodermic doses of strychnine. Patient died at 1 P.M., or 18 hours after the drug had been swallowed.

2 September 2nd 1901—S M, Mussulman, male, aged 18. His friends state that about 2 P.M. after a meal he took in mistake for chalk a tola of white arsenic. He became very ill sometime later and was brought to hospital.

4 P.M.—Conscious. Extreme restlessness. Patient is crying out that his stomach is burning and his agony is evidently great. Saliva pouring from the mouth. Bowels moved two or three times after admission, but there was no vomiting even after an emetic. Stomach washed out. The washings contained small lumps of white arsenic. Patient became rapidly unconscious about 20 minutes after admission, and died at 4-35.

An interesting case on account of the delay in the appearance of the symptoms, considering the dose taken and provided the history was accurate. The very marked salivation and the absence of vomiting are particularly noteworthy.

Belladonna—There were six patients admitted suffering from symptoms of this drug. Most of them had taken the pharmacopœial liniment by mistake. All were comparatively mild cases, and all recovered. In the following instance about 25 grains of the extract (green) were said to have been taken.

1 March 20th, 1900—R N G, Hindu, male, aged 35. Said to have taken 25 grains of the green extract of belladonna in mistake for a native remedy for nervous debility. His wife also partook of this to about the same extent and suffered similarly. They did so

about 8 P.M. on the evening of the 19th and were brought to hospital about midnight.

Condition on admission (of husband)—Patient is wildly excited, and is throwing his arms and legs purposelessly about. Pupils widely dilated. Pulse rapid, 135, respirations 37. Face flushed. Tongue dry.

Treatment—Stomach washed out and later pilocarpine gr $\frac{1}{4}$ given twice. Patient became quieter after the pilocarpine. Pulse-respiration rate became slower.

6 A.M.—Patient quiet. Pulse, 88, respiration 30. Pupils slightly dilated. Discharged cured later in the day.

Datura—Six patients only exhibited symptoms of having taken this drug. All of them were of the mildest character, and in all the seeds were the form in which it was consumed. The following is a good example—

1 13th April 1901—A Hindu female child, aged 4, was brought to the hospital at midday, with a history of having eaten a number of datura seeds. Vomiting had been induced at home and four seeds had been expelled. The child continuing to get convulsions was brought here.

Condition on admission—Semi-conscious. Pupils widely dilated. Conjunctivæ insensible. Pulse 160, small and feeble, respirations 36. Frequent general convulsions. Attempts were made unsuccessfully to pass stomach tube. One diachm of vin ipecac however induced vomiting, and two more seeds were thus expelled. Another attempt to pass the tube was made successfully, and another seed brought away. Slight improvement was then noted. She became more conscious and the convulsions were less frequent. In the evening a rise of temperature was observed. A small enema to relieve flatulence was given. Four diachms of castor oil were also administered. At 8-30 gr $\frac{1}{16}$ th of pilocarpine was given and had the effect of arresting the convulsions. The child slept for some hours during the night.

14th April, 7 A.M.—Child quite conscious. Pupils normal. Several evacuations containing five seeds passed. Temperature 99.6. Pulse 110, respirations 34. The child was allowed to be taken home later in the day.

Of all the remaining "poisons" it will be noted that they came under observation on less than five occasions. The interesting cases among these are detailed below.

Cocaine as an acute poison *per se* was not seen, but in one case of opium poisoning a quantity of cocaine was stated to have been swallowed in addition to the opium. The symptoms of the latter were entirely masked by those of the former.

There were no less than four cases in which the symptoms could be attributed to *camphor*. I have been told that the eating of camphor and the drinking of camphor water are

not uncommon practices in girls' schools in Calcutta. I have met with one case. In camphor poisoning the dilated pupils, flushed face and general excitement resembles belladonna, but the odour of the breath is distinctive. The prolonged deep sleep which ensues is also characteristic.

The intense collapse in cases of *aconite* poisoning reminds one of cholera, but there is no suppression of the urine. Aconite, as a poison, is being more frequently employed. A murder took place in the district of Backergunge some time ago, and aconite was apparently the active agent used.

Strychnine is a very uncommon poison, and the mineral acids are also rarely taken.

One, at least, of the cases classified as "Pto-maine" is a genuine one. The boy had eaten a quantity of tinned fish and had an attack of acute gastro-enteritis in consequence. In the other, three Mussulmans, brothers, partook of a meal and were all violently ill afterwards. The food, &c., were examined but no specific irritant could be detected. The instances classed as "Irritant" are similarly of a dubious nature. They were possibly arsenic ones, but this was not satisfactorily demonstrated. The other poisonous substances which were met with call for no comment.

I Camphor January 6th, 1900—A B, European female, 39. Patient had been in a melancholic state for some time and recently had been indulging in a good deal of alcohol. On January 5th, she drank a quantity of gin and beer during the day and at a late hour in the evening she swallowed about two ounces of liniment camphoræ, and a paper stating this, like wise an empty bottle, were found beside her.

Condition on admission on January 5th at 11 P.M.—Semi-conscious and extremely restless, making constant purposeless movements of her arms and legs. Face flushed. Skin warm. Pupils widely dilated. Conjunctivæ insensible. Breathing somewhat laboured, 34. Pulse full and strong, 84. Stomach washed out with difficulty owing to inflammatory condition of pharynx. A quantity of brown grumous matter, food, &c., smelling strongly of camphor evacuated. Patient fell into a deep sleep and awoke six hours later. She was immediately sick and vomited several times. She had completely recovered about midday and was taken home.

2 Carbolic acid February 15th, 1900—R G, European male, aged 36. Brought to hospital by friends about 11-30 P.M., who say that he came home intoxicated about 10 o'clock and drank the contents of a small bottle, containing about half an ounce of pure carbolic acid. The bottle brought for inspection contained a few deliquescent crystals of carbolic acid.

Condition on admission—Patient is unconscious. Face somewhat cyanosed and cold. Lips

and tongue eroded, white Salivation and increased nasal secretion Odour of breath that of carbolic acid Temp 97, pulse 120, feeble and somewhat irregular Respiration 40, stertorous

Treatment—Stomach washed out with plain water, to which a quantity of olive oil had been added Later some milk and egg albumen were passed through the stomach tube and left in the stomach Strychnine in 5 hypodermically given and repeated three times during the night Patient's pulse slowly improved in strength and diminished in frequency Respirations became less frequent and lost their stertorous character Patient regained consciousness towards morning He vomited several times then Vomiting was a troublesome symptom until the 20th Gastric sedatives were administered and stimulants freely to maintain the patient's strength There was carbolluria for two days after admission He gradually recovered, and was discharged on February 28th

Note—The alcohol which the patient had imbibed prior to the carbolic acid probably saved him Phelps and Powell have declared (vide *Lancet*, February 17th, 1900) that alcohol is the best antidote for carbolic acid and where its administration has been withheld the result has been invariably fatal, i.e., in severe cases Their method of treatment is to give first a few ounces of brandy or whiskey, which has an antidotal effect on the intense local action in the stomach They then wash out the stomach carefully with a pint of plain water two or three times, after which they give a drachm of sodium sulphate in a wineglassful of water

3 Strychnine—August 16th, 1900, H D, European male, aged 30 Patient was said to have eaten eight seeds of *Strychnos nux vomica* after his tiffin an hour previously Half a seed was found in his pocket At 2-30 an emetic was given him outside, which caused him to vomit freely The spasms continuing, he was brought to the hospital, where he was seen at 3 P.M. His condition then was "intermittent tetanic spasms, paroxysms frequent and painful, emprosthotonos, pupils dilated, expression anxious, pulse small, 120" Stomach washed out Three drachms of potassium biomide with 20 grains of chloral given Spasms became less frequent and patient gradually recovered At 9 P.M. he had quite regained his normal condition

4 Nitric Acid.—March 6th, 1901, R L M Hindu male, aged 35, a silversmith Under the influence of alcohol he took one ounce of pure nitric acid (strong) used by him in his work at 11 A.M. Brought to hospital at 1 P.M., semi-conscious, cold and collapsed, pulse 60, very weak, respirations 15, is suffering great abdominal pain, mouth and tongue corroded He vomited frequently and the vomit contained blood

Treatment—Magnesia, milk and other demulcents freely Stimulants per rectum and hy-

podermically Became comatose at 7 P.M. and died at 9 P.M., 10 hours after taking the acid

5. Aconite—April 15th, 1901 X. Z, Hindu male, aged 40 Patient given a whitish substance to eat along with his food about 4 P.M. Vomited three or four times at home

Seen at 9-30 P.M. Patient is in a condition of extreme collapse, conscious and restless, body is cold, clammy perspiration on forehead, pupils equally dilated, pulse 80, very irregular, small and compressible, respirations 20, easy Complaints of irritation of mouth and throat and is making constant attempts to vomit No marks of corrosion in the mouth

Treatment—Stomach lavage, stimulation hypodermically and by the mouth Vomited once or twice during night Condition critical until 2 A.M. when pulse showed signs of increasing strength Patient became quiet and slept towards morning April 16th, weak but otherwise well Discharged on 17th

6 Chloroform.—October 20th, S D, Hindu female, aged 17, said to have swallowed a quantity of chloroform by mistake for some purgative medicine at 6-30 A.M. Admitted into hospital at 7-20 A.M.

Patient totally unconscious, pupils dilated, conjunctival reflex absent, pulse almost imperceptible, respiration stertorous Stomach rapidly washed out with warm water Liq Strychnine in 5 hypodermically Respiration stopped suddenly about 7-40 A.M. Artificial respiration-instituted with success

At 10 A.M. patient had partially recovered consciousness and a tendency to vomit was noted At 11 A.M. she was quite conscious, pulse 90, respirations 38, nausea still present Allowed to be taken home at 3 P.M.

NOTES ON RUPTURE OF THE SPLEEN

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RUPTURE of the spleen is an injury which not infrequently comes under the notice of the Civil Surgeon in India, not, as a rule, in the hospital during life, but after death in the subject of a judicial *post-mortem* examination This injury is one of great importance from a medico-legal point of view Although fatal in practically every case, it may be caused by a very trifling degree of violence, and without any visible external injury, especially when the spleen is enlarged or diseased, as it so frequently is in the fever-saturated population of Lower Bengal The fact that the enlarged spleen is so easily ruptured is usually taken into account by the courts in imposing sentence, when an accused person is convicted of having caused death in this way

I have always taken much interest in this injury, eleven cases of which came under my notice in my early experience as a Civil Surgeon. Since that time I have collected notes of as many cases of rupture of the spleen as I could. With this object I have searched the *post-mortem* report books of every district where I have had the opportunity of doing so, and extracted notes of all cases of rupture of the spleen. I have thus collected a series of over 300 cases from twelve different districts, as given in Table No I. (The notes of two other districts, Saran and Chumpanun, have unfortunately been lost.) In only thirteen of these 304 cases was the *post-mortem* examination made by myself. No less than eleven out of these thirteen cases occurred in my first Civil Station, Mymensingh, and one each in Monghyr and Hughli.

Cases in which the body had been run over by an engine or train, in which rupture of the spleen was only a minor incident among extensive general injuries, have not been included among these 304 cases of rupture of the spleen. The total number of *post-mortem* reports gone through was 9,876, showing a percentage of 3.08 cases of ruptured spleen.

autopsy In every case the examination was made for judicial, not for scientific, purposes. To this cause is due the very scanty information available in many, especially among the earlier cases, (those of twenty to thirty years ago). The statement of the fact that "the spleen was extensively ruptured" may be sufficient for the court, it does not give much to go upon when discussing the site of rupture, or the relation of the spleen to other viscera. In many cases, especially in later years, the information given is full and complete.

The spleen, according to Gray, has two surfaces, one external and convex, the other internal and concave, two ends, the upper thick and rounded, the lower thin and pointed, and two margins, anterior and posterior, the former often being notched. Gray gives the normal size and weight of the adult (European) spleen as follows: length, about 5 inches, breadth, 3-4 inches, thickness, 1-1½ inches, weight about 7 oz. In natives of this country, whose size and weight is usually much less than those of Europeans, the weight and dimensions of the spleen should presumably be somewhat less than the above. But in many parts of Bengal a normal spleen

TABLE NO I

	PERIOD OF RECORD		SIZE OF SPLEEN*							RUPTURED	
	Number of years	Dates	Much Enlarged	Enlarged	Not Enlarged	Decomposed	Not stated	Total	Percentage Enlarged*	Number	Percentage
Midnapur	19 years	1871-89	22	171	223	190	79	685	46.39	44	6.42
Dinajpur	14 "	1875-88	13	102	217	90		622	59.21	26	4.17
Darjiling	6 "	1883-87	1		29			30	3.33		
Dakka	12 "+	1872-88		352	824	436	119	1,761	31.67	46	2.61
Purnea	14 "	1876-90	20	91	160	151	61	486	40.95	15	3.08
Backerganj	17 "	1873-89	48	277	918	410	79	1,732	25.33	16	0.92
Mymensingh	9 "+	1874-87	[No notes available]					820		34	4.14
Bhagalpur	3½ "	1882-86	6	19	54	39	7	125	31.64	3	2.40
Monghyr	9 "	1889-97	7	37	154	55	7	260	22.22	11	4.23
Patna	19 "	1879-97	22	67	467	194	27	777	14.20	16	2.05
Alipore (24 Pargannas)	16 "	1885-99	188	543	504	371	230	1,836	59.19	37	2.01
Hughli	20 "	1881-1900	58	251	147	78	208†	742	67.76	50	7.54

* Excluding from the total those "decomposed" or "not stated"

† Broken periods

‡ 162 in the six years, 1881-86

I have known it to be seriously asserted, by an educated Bengali, that no such lesion as rupture of the spleen is known, that the ascription of death to rupture of the spleen is a mere fiction put forward in mitigation of sentence on behalf of a European accused of killing a native. Such an assertion could, of course, only be due to the most absolute ignorance of the subject. In not one of these 304 cases was a European charged with causing the death of the victim. In one case the deceased was a European, death in this case being due to a fall.

All these 304 cases were medico-legal *post-mortem* on bodies sent in by the police, that the cause of death might be ascertained by an

is less common than one enlarged, and the average size and weight of the spleen in the adult native of Bengal would probably be greater than those quoted above.

The site of the injury is described in very different ways in these reports, but it is fairly obvious that the words "inferior", "under", "anterior," and "concave," used in relation to surface, all refer to the internal surface, while "external," "outer," "posterior," and "convex," all refer to the external surface. In a very greatly enlarged spleen the external surface may come to lie partly to the front, but even in these cases I think that the word "anterior" is used as applying to the internal surface. What position

is intended in such descriptions as "outer end" (Dakka), "cardiac extremity" (Patna), and "front and left side" (Hughli), it is not easy to say with certainty.

Mortuaries in India are seldom provided with scales and weights for weighing viscera. Sometimes the *post-mortem* house has barely room on each side of the table, on which the body is placed, for the operator to stand. Nor, for judicial purposes, is there any necessity that the weights of the viscera should be recorded. In describing an enlarged spleen, I usually give its three dimensions in inches.

As regards the use of the term *enlarged*, when a spleen has been described in the *post-mortem* report as much enlarged, or enlarged, I have entered it in the tables as such. Otherwise, I have entered as "much enlarged" all cases in which the spleen is said to have been three times the normal size, or larger, those described as ten or more inches in length, and those weighing one pound or more.

Table No I above brings out some facts which appeared to me singular, and were certainly unexpected. I was not prepared to find that the percentage of ruptured spleens in Backerganj would work out to less than half that of any of the other districts given in the table. Nor that the percentage of enlarged spleens in Midnapur, always a popular and pleasant district, would be found to be nearly double that of Backerganj, which is very much the reverse (I have served in both myself).

In calculating the percentage of enlarged spleens, I have omitted from the total all which have been described as decomposed, and all in which no reference to size has been made, merely putting the enlarged and the much enlarged on one side, the not enlarged on the other. The percentage of enlarged spleens may be taken as a rough test of the unhealthiness of any district especially as regards malarial fever. Judged by this test, Hughli comes out an easy first, Dinajpur and the 24-Parganas being almost equal, second. This result is only in accordance with what I had expected. The chief surprise was to find Midnapur so high, Backerganj so low. Fourth on the list comes Midnapur, Purnea, a very malarious district, and a very unhealthy one for natives, though a pleasant and popular station for Europeans, comes fifth. Then, after a big drop, come Dakka and Bhagalpur, almost equal, followed by Backerganj, a little above Monghyr, and then Patna. I regret that I have not preserved the figures for Mymensingh, which I would expect to stand high in the table. Taking the cases in which the spleen was ruptured, 24 were enlarged, 10 not stated, while not a single one was described as normal or not enlarged. Calculated in the same way as the other districts, this would give a percentage of 100 as enlarged. Such a statement would, no doubt, be a considerable exaggeration, but certainly the percentage

of enlarged spleens in Mymensingh must be considerable.

To give a description, or a detailed report, of over 300 cases of rupture of the spleen, would require a book, not a magazine article. I propose, therefore, to consider the cases *en bloc* under certain definite headings. As regards some of these headings, one paragraph and one table will suffice for the whole series, others will require consideration at greater length, district by district. A few of the cases will be described individually but briefly.

The following are the headings under which I propose to consider the cases, numbers 4, 5 and 8 being given district by district:—

- 1 Sex
- 2 Age
- 3 Cause
- 4 Site
- 5 Single or multiple
- 6 Size of spleen
- 7 Contents of Stomach
- 8 Complications, other injuries
- 9 Time of year
- 10 Period of survival
- 11 Wounds of spleen
- 12 Ruptures of liver

I Sex, and II Age—These may be combined in one table (No II). In the whole series, males (147) and females (157) are almost equal. Females predominate in Dakka (nearly double), Midnapur, Mymensingh and Hughli, males in the 24 Parganas (nearly treble), Purnea and Backerganj.

Regarding age, nearly half the whole number were from 25 to 45, nearly two-thirds adults, from 15 to 45. Men of this age are most likely to be engaged in fights, or to receive accidental injuries at work, while adult females are the most likely to become involved in family jars. The youngest child in the list was a female child of 18 months, which was killed by a kick at Hughli. Two children of two years, both females, and a third of five, were killed at Patna by being run over, and a small boy of five at Backerganj by a tree falling on him. The oldest was a man of 70, killed at Dakka by kicks and blows of the fist.

TABLE NO II—AGE AND SEX

	Male	Female	0-5	5-15	15-25	25-45	Over 45	Age not stated	TOTAL
Midnapur	16	28		5	7	21	6	5	44
Dinajpur	15	11		5	1	14	2	4	26
Dakka	16	30		7	10	18	9	2	46
Purnea	9	6		1	6	6	2		15
Backerganj	10	6		4	2	5	5		16
Mymensingh	14	25		6	6	15	7		34
Bhagalpur	8			1		2			3
Monghyr	6	5		1	2	6	2		11
Patna	8	4	2	2	2	7	3		16
24 Parganas	27	10		3	6	23	5		37
Hughli	23	33	1	4	11	27	11	2	56
TOTAL	147	157	3	39	63	144	52	3	304

III. Cause—The causes to which the fatal rupture was ascribed are given in Table No III. The most common cause is beating with a *lathi*, or club, or other heavy blunt instrument, which accounts for 102, or just over one-third of the whole series. Blows with the fist, kicks, or slaps, or two or more of these causes combined, account for 62, a little over one-fifth, while in 57, or nearly one-fifth, the cause is given as unknown, or is not given at all, or is reported as due to some other cause, or is indefinite, such statements as "body found in a tank," "found dead," &c., being the only information given. Falls, usually from trees, in one case from a high bridge (24-Parganas), were the cause of death in 22 cases, including the one European, 17 were run over by carts or carriages, 23 are said to have been murdered.

or train. Of such cases there were sixteen in the 24-Parganas. Patna seems to be specially prone to furious driving. Two of the deaths there were caused by tramcars passing over the body, which, after all, is almost as certain a cause of death as an engine. There is little hope of survival in cases also in which a heavily loaded bullock cart passes over the body, while, as I know from personal experience, a light dog cart may cross a man's body and leave him none the worse.

Backerganj shows no deaths caused by being run over. Almost all traffic there is carried on by boat, in my time, thirteen years ago, there were no bullock carts or *tikka gans* at Barisal, and very few private carriages or dog carts.

In the three cases in which rupture of spleen was caused by a heavy weight falling on the

TABLE NO III—CAUSE

	Blows with <i>lathis</i> , &c	Blows of fist kicks, or slaps	Pressure on body	Murdered	Falls	Run over	Heavy weight falling on body	Miscellaneous	Unknown, in definite or not stated	Total
Midnapur	13	10		4	1	1	1	2	12	44
Dinajpur	9	1		1		4	1	5	1	26
Dakka	15	18		1	2	1		2	7	46
Pornea	6				2				7	15
Backerganj			2	2	1		1		6	16
Mymensingh	17	5		12	1	2		2	5	34
Bhagulpur									1	1
Monghyi	1	4		2	1				1	11
Patna	7	1		3		6				16
24 Parganas	11	1		3	8	3		1	6	37
Hughli	18	15		4	5			4	7	56
Total	102	62	2	23	22	17	1	16	57	304

Pressure on the body is given as the cause of only two deaths out of the whole series of 304 cases, both in Backerganj. I was surprised to find so few cases ascribed to this cause, as it is well known in many parts that severe internal injuries may be caused in this way with little or no external marks of injury. The drawback to this form of murder is that it requires the participation of several hands. It is carried out in two ways, either one man jumps on the prostrate body of the victim, or pounds the body all over with knees, elbows, and heels, while several others hold him down, or else two men place a bamboo across the body at a right angle, and then, one sitting on each end of the bamboo, seesaw it all up and down the body, from neck to groin. This second method also requires the co-operation of others holding down the victim.

Falls account for twenty cases, of which eight, over one-third, were in the 24 Parganas. The falls were mostly from high trees, especially cocoanut trees.

Run over—This heading includes seventeen deaths. As stated above, I have omitted cases in which the body was run over by an engine

body, the agent was a bag of salt in the first case (Midnapur), a heavy branch in the second (Dinajpur), and a tree in the third (Backerganj).

The sixteen cases returned as due to miscellaneous causes show a considerable variety. Midnapur shows two such cases, in one death was caused by a clod of earth thrown, striking the left side of the body, in the other by an elephant. Dinajpur shows the largest number of deaths under this heading, five, a blow with a shoe, a blow with a wooden stool, a prod from a cow's horn, injuries inflicted in the attempt to effect sexual intercourse, the victim being a female child of 12, and accidental injuries caused in a game, "*dadhukada*," in which one man tries to take away by force a cocoanut which another man holds against his chest. Two cases at Dakka were caused by a blow with a *puta* or grinding stone, and by the kick of a horse. Two at Mymensingh, one by being knocked down by a horse, the other by a stab. One in the 24-Parganas was due to being knocked down (not run over) by an engine, two of the four deaths at Hughli were also thus caused, the other two at Hughli were due to a blow from the shaft of a stationary engine in a

jute mill, and a blow on the left side from a ball thrown in play during a game

The Mymensingh case due to a stab is one of the few which I give in detail, as an instance of how trivial a blow may cause death from rupture of the spleen. The *post-mortem* examination in this case was made by myself. "Nabu Sheikh, Mussalman, male, 40, of Diwanganj, 14th November 1886, said to have been killed by a stab. A small wound, $\frac{3}{4}$ inch long, gaping $\frac{1}{2}$ inch wide, over eighth left rib, about five inches above and external to the umbilicus. From its outer end a slight scratch runs upwards and outwards for three inches. This wound was quite superficial, $\frac{1}{4}$ th inch deep, *penetrating only into and not through the subcutaneous cellular tissue*. Peritoneum healthy, contained about half a pint of dark fluid blood round spleen. Stomach healthy, empty. Liver enlarged and congested. Spleen enlarged, about twice normal size, a rupture, three inches long, crossing outer side half way between upper and lower ends. Death was due to rupture of the spleen, probably caused by the blow, trifling in itself, which inflicted the wound over eighth rib."

The one case in which the victim was a European occurred in the 24-Parganas in 1898. Deceased was a male, 38 years old. He was suffering from diarrhoea and bronchitis, he slipped and fell in his bath-room, complained of difficulty of breathing, and died in a few minutes. The lower lobes of both lungs were congested. Peritoneum contained 5lb fluid blood, and several large clots, stomach congested, contained 1lb greenish liquid. Spleen weighed 1lb 3 oz and measured seven inches long, five broad, two thick, there were four lines of rupture on the internal surface. Probably in falling deceased came down with his left side on the small wall which usually divides a bath-room.

In two cases a well-marked ligature mark round the neck, with other signs of hanging, were found in conjunction with rupture of the spleen. In one case, at Mymensingh, the rupture was small, and the reporter suggests that it may have been caused in taking down the body, after death. In the second case, from the 24-Parganas, the peritoneum contained 1½lb dark fluid and clotted blood, the spleen was much enlarged, five times the normal size, with a rupture 5 inches long, 1½ deep, crossing its internal surface.

The *post-mortem* report states that the rupture of the spleen would have caused death, but that the body was probably hung up before death to divert suspicion, and that death was actually due to hanging.

IV Site
V Single or multiple } These headings are considered

below at greater length district by district. The following table No IV gives the cases for each district under these heads. A rupture on

both surfaces does not necessarily mean multiple ruptures, as in many cases one long rupture involved both surfaces, crossing either the anterior or posterior margin.

TABLE NO IV—SITE OF RUPTURE

	Inner surface	Outer surface	Both surfaces	Miscellaneous	Site not stated	Total	Single	Multiple
Midnapur	22	5	1	9	7	44	38	6
Dinajpur	8	13		2	2	26	18	8
Dakka	18	5	2	14	7	48	28	12
Purnea	9	3		1	2	15	10	5
Backerganj	4	4	1	1	6	16	13	3
Mymensingh	14	8	3	5	4	34	30	4
Bhagalpur	1		2			3	1	2
Monghyr	4	3	2	1	1	11	11	
Patna	4	2	1	6	3	16	10	6
24 Parganas	23	3	7	4		37	18	19
Hughli	26	9	5	7	9	58	42	14
TOTAL	133	53	24	50	42	304	225	79

It will be noticed that the inner surface is by far the most common site for rupture, the lesion being on this surface in just over one-half of the cases, if we omit those in which the site is not stated.

Nearly three-fourths of the ruptures are single. In the 24-Parganas the multiple ruptures are actually in a majority, while in Bhagalpur they are two to one, but the number of cases in that district, three, is so small that they need hardly be taken into consideration.

VI Size of Spleen

The following table gives this information for the whole series of 304 cases.

TABLE NO V—SIZE OF SPLEENS

	Much Enlarged	Enlarged	Not enlarged	Not stated	Total
Midnapur	15	21	2	6	44
Dinajpur	7	12	1	6	26
Dakka	20	14		12	46
Purnea	2	13			15
Backerganj	4	7	1	4	16
Mymensingh	11	13		10	34
Bhagalpur	2	1			3
Monghyr	2	6		1	11
Patna	1	5	2	8	16
24 Parganas	27	4	2	4	37
Hughli	16	27		13	56
Total	107	125	8	61	304

It will be seen that in only eight, out of the whole series of 304 cases, is the spleen stated to have been of normal size. A few short notes are given of these eight cases in which spleens of normal size were ruptured by external violence. MIDNAPUR, two cases, in the first, a woman of 16, was said to have been

murdered, the stomach contained a meal of undigested rice and vegetables, the spleen was not enlarged, there was a rupture $1\frac{1}{2}$ inches long half an inch deep, on its inner surface. In the second case, a girl of 15 was killed by blows with the handle of a *khantu* (shovel), the stomach was empty, the spleen was not enlarged, there was a large irregular laceration of the "back part" (posterior surface?). **DINAJPUR** one case, a man of 37, killed by beating with *lathies*. The stomach was full, the spleen of normal size, it had a laceration in convex surface, $\frac{1}{4}$ inch long by $\frac{1}{4}$ inch broad. **BACKIRGANJ**, one case, a male of 50, cause not stated, spleen not enlarged, very soft, ruptured (site of rupture not stated). **PATNA**, two cases. First, a man of 50, said to have been killed by a blow with a *garasa*, or battle-axe, he had a wound on the left thigh severing the femur, and almost cutting off the leg, another wound on the back of the left leg, the 11th left rib was fractured the spleen normal in size, there were two ruptures, one superficial three inches long, on outer surface, the other at lower extremity, $1\frac{1}{2}$ inches long, $\frac{1}{2}$ inch deep. Second, a man of 25, killed by *lathi* blows, there were bruises all over the body, the 8th to 10th right ribs were fractured, the stomach healthy, full of half digested vegetable food, the spleen normal in size, a rupture two inches long, $\frac{1}{4}$ inch deep, in middle of outer surface. **TWENTY-FOUR PARGANAS**, two cases. First, a male of 65, killed by a carriage running over him, the 2nd to 4th right and 2nd to 7th left ribs were fractured, stomach contained 24 oz sweetmeats and dark clotted blood, it was lacerated for $1\frac{1}{2}$ inches along greater curvature, the liver weighed 1 lb 9 oz, there were six transverse ruptures from one to three inches long, and from $\frac{1}{2}$ to $\frac{3}{4}$ inch deep on its superior surface, the spleen was healthy, weighed 2 oz, there was a transverse rupture, two inches long, half an inch deep. Second, an old woman of 60, said to have been killed by dacoits, the stomach was distended with an undigested meal of rice and vegetables, the liver weighed 2 lb 12 oz, there was a transverse rupture, $1\frac{1}{2}$ inches long, on under surface of posterior border of right lobe, the spleen was not enlarged, weighed 4 oz, there was a rupture $2\frac{1}{2}$ inches long, $\frac{1}{4}$ inch wide, half inch deep, on inner surface, running transversely across hilum.

It is worthy of note that in five out of the eight cases in which a healthy spleen was ruptured, the stomach is said to have been full, while in only one case is it said to have been empty.

VII Contents of Stomach—With reference to the seat of rupture, I worked out these facts carefully, to see whether they would give any ground to support the theory that when the stomach is full, the spleen would be most likely to be ruptured on its inner surface. I do not think that the facts ascertained are of any great

importance. It is true that the cases in which the stomach was full, or contained some food, and the spleen ruptured on its inner surface, came to 83, or more than one-fourth of the whole series of cases, and that the proportion of ruptures of the inner to those of the outer surface of the spleen is greater when the stomach contained food than when it was empty. But the disproportion is not sufficiently large to be a safe foundation for an argument. In particular, both the actual number of spleens ruptured on the inner surface, and then proportion to those ruptured on the outer surface or elsewhere, is larger in the cases in which the stomach contained some food than in those in which it was full. If the theory were true, one would naturally expect that the fuller the stomach, the more prone it would be to rupture on the inner side.

I have included all cases in which the stomach was said to contain one pound of food or over as "full," from four ounces to a pound as "some food," under four ounces as a "little food."

The only individual case which requires mention under this heading is one in which the stomach itself was ruptured, this case has been described in detail under head VI, size of spleen. "Miscellaneous" in the tables includes all cases in which the rupture cannot be brought under the head of either inner, outer or both surfaces.

TABLE NO VI—CONTENTS OF STOMACH

	Midnapur	Dinajpur	Dacca	Punea	Backerganj	Mymensingh	Bhagalpur	Bonghi	Patna	24 Parganas	Hughli	Total
Stomach full												
Inner surface	5	7	7	3		5	1			5	5	38
Outer "		9		1		4			1	1		16
Both "		2										3
Miscellaneous	1	1	1						1	2	1	7
Site not stated	1			1							1	3
Stomach contained some food												
Inner surface	10		7		2	2	1		2	2	10	45
Outer "	1				3	2			1	1	3	11
Both "	1		1		1		1		1	2	1	8
Miscellaneous	4		5			3		1	2	1	4	20
Site not stated			2	1	1			2			4	10
Stomach contained a little food												
Inner surface	1				1	2				4	3	11
Outer "		1		1						1	1	3
Both "								1		1	1	3
Miscellaneous	1				1	1					1	4
Site not stated			2		2	1		1				6
Stomach empty												
Inner surface	1	1			1	3		2	1	4	7	20
Outer "	2	1	5		1	1		1		2	2	13
Both "						2		1		3	1	7
Miscellaneous	2		5	1		1			3	1	1	14
Site not stated			1	1					1		2	5
Contents of stomach not mentioned												
	14	6	8	7	2	7		2	1	1	9	57
Total	44	26	46	15	16	34	3	11	16	37	56	304

VIII Complications—Under this head I propose to describe briefly the other injuries suffered at the same time as rupture of the spleen, giving the cause of death (if stated) in each case. This may most conveniently be done district by district. But a short summary of the various complications may first be given. In thirty-two cases some other organ suffered rupture as well as the spleen, *ie.*, in rather over ten per cent of the whole, in nineteen of these thirty-two cases, or in over six per cent of the whole series of 304 cases, the liver was ruptured.

Liver ruptured	15 cases
Liver, lungs and heart	1 case
Liver, lungs and right kidney	1 "
Liver and right kidney	1 "
Liver and stomach	1 "
Left kidney	5 cases
Heart	3 "
Intestine (duodenum one, ileum one)	2 "
Peritoneum	1 case
Omentum	2 cases

A—Madnapur

(a) Rupture of outer surface of left kidney (beating)

(b) Fracture of six left ribs (three in two places), left humerus, scapula, and clavicle, and 7th dorsal vertebra (murdered)

(c) Fracture of 9th to 11th left ribs (cause not stated)

(d) Fracture of two ribs on right and one on left side, with rupture of right internal mammary artery (killed by elephant)

(e) Fracture of 4th left rib (killed by violence)

(f) Extravasation in lungs (blow with mallet)

(g) Fracture of 6th and 7th left ribs (run over by cart)

B—Dinagpur

(a) Liver torn to pulp (run over by cart)

(b) Peritoneum torn in lumbar region on both sides (kicks)

(c) Cut throat and rupture of gastro-splenic omentum (blow with stool)

(d) Fracture of 10th and 11th left ribs (beating)

C—Dakla

(a) Fracture of skull (beating)

(b) Fracture of 5th and 6th left ribs (kicks and blows)

(c) Fracture of 5th, 6th and 7th left ribs (kicks and blows)

(d) Fracture of 5th to 7th right, 6th to 10th left ribs, and pleura torn (found dead)

(e) Fracture of 2nd to 12th right, 7th and 8th left ribs, and both pleurae torn (tied up and beaten to death)

(f) Fracture of 6th to 8th right, 9th and 10th left ribs (kicks and blows)

(g) Fracture of left clavicle (run over by carriage)

(h) Fracture of skull (beating with *lathi*)

(i) Fracture of nasal bones, seven right and nine left ribs, lungs and heart torn by broken ends of rib, rupture of liver (ascribed to blows with fist and with a *kuqqa*), probably due to blows with a blunt weapon

(j) Punctured wound on left side of abdomen, penetrating peritoneal cavity, but not touching any of viscera (stab)

D—Purnea

(a) Fracture of left temporal bone (beating)

(b) A laceration of rectum, above sphincter ani, two inches long, penetrating into peritoneal cavity (beating, and pushing a stick up anus)

E—Backerganj

(a) Rupture of liver, to right of lobus spigelii (a tree falling on the deceased)

(b) Rupture of liver, in three places, two on under and one on posterior surface of right lobe (pressure on body)

(c) Fracture of 10th left rib, and tear of peritoneum (fall from tree)

(d) Rupture of duodenum, in lower end, two inches long (cause not stated)

(e) Two lacerated wounds on head (murdered)

(f) Fracture of sternum (pressure on body)

F—Mymensingh.

(a) Detachment of costal cartilages from left ribs, from 5th to 10th (cause not stated)

(b) Rupture of left kidney, contused into pulp, nymphæ and perineum contused (beating)

(c) Fracture of 2nd to 12th right, 3rd to 7th and 10th to 12th left ribs, lungs and pleurae lacerated by broken ribs, left hand cut off at wrist (wounds)

(d) Rupture of ileum, $\frac{1}{2}$ inch long, on anterior aspect about middle (beating)

(e) Mesentery full of small blood clots from ruptured vessels (run over by cart)

(f) Fracture of sternum, rupture of aorta and heart (run over by cart)

(g) Rupture of liver, small obtuse angled, $\frac{3}{4}$ inch long, on lower surface of left lobe (beating)

(h) Fracture of 9th left rib (beating)

G—Bhagalpur Nil

H—Monghyr Nil

I—Patna

(a) Fracture of cartilages of fourth to sixth left ribs, rupture of liver, superficial, half inch long, a quarter inch broad, on convex surface of right lobe (kicks and blows)

(b) Fracture of eighth to tenth left ribs, extensive rupture of liver (run over by cart)

(c) Three fractures of skull, fracture of third to tenth left ribs (*lathi* blows)

(d) Left femur severed by a battleaxe (murdered)

(e) Fracture of twelve left and six right ribs, sternum, left clavicle, and fifth cervical vertebra, spinal cord, and œsophagus divided, pleurae lacerated (run over by tramcar)

(f) Fracture of eighth and ninth left ribs (*lathi* blows)

(g) Fracture of eighth to tenth right ribs (*lathi* blows)

(h) Fracture of sixth to ninth right ribs, sacrum, innominate bone, rupture of liver, both lungs, and right kidney (run over by tramcar)

(i) Fracture of seventh to tenth right ribs, rupture of liver, extensively on upper surface (run over by cart)

(j) Fracture of second to fifth right ribs, fourth to tenth left ribs, rupture of pericardium and left auricle of heart (run over by carriage)

(k) Fracture of tenth left rib (*lathi* blows)

J—Twenty-four Parganas

(a) Rupture of liver, right lobe lacerated to pulp (fall from a tree)

(b) Rupture of capsule of liver in two places, each $3\frac{1}{2}$ inches long across upper surface of left lobe (fall from a tree)

(c) Fracture of skull (fall from a high bridge)

(d) Rupture of liver, extensively in many places (fall from a tree)

(e) Fracture of ninth to tenth left ribs, rupture of left kidney at pelvis (*lathi* blows)

(f) Ligature mark round neck, with parchment mark on dissection, and impression of knot (probably killed by blows, and afterwards body—a girl of 12—hung up to divert suspicion)

(g) Rupture of omentum (fall from a tree)

(h) Wounds on head, bruises all over body (*lathi* blows)

(i) Incised wounds on head (killed with a *dhao*)

(j) Fracture of skull (*lathi* blows)

(k) Rupture of liver in two places, both on under surface, one $2\frac{1}{2}$ inches long, $\frac{1}{2}$ inch broad, extending inwards from right border of right lobe, the second $\frac{1}{2}$ inch long, $\frac{1}{2}$ inch deep, commencing from left border of right lobe, rupture of right kidney, 1 inch long, $\frac{1}{2}$ inch deep, transversely across hilum (body found dead)

(l) Fracture of second to fourth right, second to seventh left ribs, rupture of stomach for 11 inches along lower curvature, rupture of liver transversely in six places on superior surfaces, each rupture 1 to 3 inches long, $\frac{1}{2}$ to $\frac{1}{4}$ inch deep (run over by carriage)

(m) Fracture eighth to eleventh left ribs, fracture of skull, rupture of left kidney, half an inch long (*lathi* blows)

(n) Rupture of left kidney on posterior surface $\frac{1}{2}$ inch long, $\frac{1}{4}$ inch broad, $\frac{1}{4}$ inch deep (*lathi* blows)

(o) Rupture of liver, transverse, $1\frac{1}{2}$ inch long, on under surface of posterior border of right lobe (killed by dacoits)

K—Hugh

(a) Rupture of liver in several places (blows and kicks)

(b) Rupture of liver (body found in a tank)

(c) Rupture of liver, in left lobe, extending from anterior margin upwards for $1\frac{1}{2}$ inches, almost completely dividing substance of organ (kicks and blows, a child)

(d) Rupture of left kidney near hilum (a blow with a piece of wood)

(e) Rupture of heart, $\frac{3}{4}$ inch long, $\frac{1}{4}$ inch broad, at base of left ventricle, pericardium contained 5iv blood (murdered, body found floating in a tank, with hands tied behind back)

(f) Fractures of left leg, skull, fourth to seventh right ribs, laceration of right lung, rupture of liver, which was lacerated in several places on upper surface (knocked down, not run over, by engine)

Under this heading I will relate in full one case of multiple injuries, including rupture of the spleen, in which the *post-mortem* examination was made by myself Ramjai Chang, Hindu male, fifty, of Mymensingh *thana*, said to have been killed by a cart passing over him, 26th January 1887. There were scars of an old burn on the front of the upper part of the chest and the right shoulder, the left arm had been amputated at the middle at some former time. The sternum was fractured, completely broken in two, immediately below its junction with the fifth costal cartilages. The heart was lying loose in the pericardium, completely torn away from the great vessels. The aorta was completely ruptured across, three-quarters of an inch above its origin. The pulmonary veins were torn away from the left auricle, making a gap in the auricle, two inches long by half an inch broad. The right auricle was similarly ruptured, being torn away from both venæ cavae, the whole outer wall of the auricle was torn out. The pulmonary artery had been torn away from the right ventricle, leaving a large gap in its upper end. The peritoneum was healthy, it contained about a pint of dark fluid blood round the spleen. Stomach healthy, contained one ounce of grey muddy fluid. Omentum full of small clots of effused blood, due to small ruptured vessels. Liver healthy, uninjured. Spleen half as large again as normal, there were two ruptures. The first commenced on the internal surface, 1 inch above the lower end, and extended round the lower end into the external surface, where it almost joined the second rupture, a bridge of spleen capsule, one line broad, separating the two ruptures. The first was $1\frac{1}{2}$ inches long, the second was $2\frac{1}{2}$ inches long, and extended from the end of the first, in a semi-circular manner, round the anterior edge of the spleen into the internal surface again, where it ended close to the hilum. Death was due to the injuries received, probably caused by the passage over the body of a heavy cart.

IX Time of year—The following table, No VII, gives the time of year at which the cases of rupture occurred. I do not think it proves much. The largest number were in December and January, the smallest in June, which is in accordance with what one would expect, but the differences are not striking.

TABLE NO VII—TIME OF YEAR

	January	February	March	April	May	June	July	August	September	October	November	December	Not stated	TOTAL.
Midnapur	4	3	5	3	3	4	4	1	1	4	7	5		44
Dinajpur	5	1	1	2		3	2	4	1	3	1	3	1	26
Dakka	7	7	6	4	8	1	1	1	3	1	4	2		46
Purnea	3	1	2			1			1		2	3		15
Backerganj	2	1		1	3		2		1	1	3	2		16
Mymensingh	4		4	2	5	1		5	6	2	3	1		34
Bhagalpur	1						2		1	1	1	3		3
Monghyr	1		2		1	1	2			1	3	3		11
Patna		1	1	2	6	1	1	2	3	3	3	8		16
24 Parganas	1	1	5	2	5	1	6	5	5	10	2	4		37
Hughli	6	5	5	2										56
TOTAL	34	20	31	18	32	13	20	21	23	26	29	36	1	304

X Period of Survival—The questions of how long a man may survive rupture of the spleen, and whether he may possibly recover from such an injury, are of much interest. They are, unfortunately, questions upon which this large series of cases throws next to no light. In only three out of the whole 304 cases is the point even mentioned.

The information furnished by the police is usually very defective, often necessarily so. The sub-inspector or head constable who enquires into a case of unnatural death, often at a place at a considerable distance from his head-quarters, is entirely dependent upon the statements made by ignorant villagers, who at best are inaccurate, who know nothing of the value of time, or of the importance of getting exact information as to the time of the injury and of death, and who may have very good reason to make statements deliberately misleading. The officer who conducts the enquiry can only give the information he gets. Frequently the time of death is not even mentioned in the reports sent in, much less the interval between the injury and the fatal result.

Lieutenant-Colonel E. G. Russell, I.M.S., in his work on *Injuries of the Spleen** (pp 217—221), gives two cases in which recovery apparently took place after rupture or bruise of the spleen, the diagnosis, in one case, being confirmed by dissection of the victim, who died several years afterwards. He also quotes four cases in which the victim survived the injury for over twenty-four hours, in one case five, in two four, and in one two-and-a-half days.

The three cases in this series which bear on this point are as follows—

(i) Dakka, Hindu male, thirty-one, said to have been beaten on 2nd January 1888, and to have died "a few days later." *Post-mortem* on

7th January 1888. Peritoneum contained a pint of fluid effused blood, large omentum bruised, small gut bruised in many places, stomach empty, spleen much enlarged, ruptured at upper part of external surface.

(ii) Mymensingh, Mussalman male, ten, said to have died three days after being knocked down. No external marks of injury. Peritoneum healthy, stomach healthy, contained a little muddy fluid, spleen slightly enlarged, a small rupture $\frac{3}{4}$ inch long at lower end of anterior border, 5 in—5 in of blood effused around the rupture. (In this case, the *post-mortem* examination was made by myself on 11th April 1886.)

(iii) Twenty-four Parganas, Mussalman male, fifteen, said to have been beaten with *lathis* on 20th July 1897, was admitted to the Campbell Hospital on the same day, and died there on the 6th of August, *post-mortem* on 7th August. There was an oblique longitudinal mark, five inches long, across the left side of the back, with fracture of four ribs, the 8th to 11th left ribs. The left temporal and parietal bones, and the left wing of the sphenoid bone were fractured, the meninges of the brain were inflamed, and covered with lymph, containing much serum. The left pleura was adherent, peritoneum full of dark blood, stomach healthy, contained some mucus, liver pale, waxy, bloodless, spleen much enlarged, weight 1 lb, a rupture, $\frac{3}{4}$ inch long, on inner aspect, left kidney weighed 6 oz, a rupture in it, $\frac{1}{4}$ inch long (site of rupture not stated).

There can be no doubt about the facts of this case, as the boy was in hospital from the day of the injury till his death. He had undergone fracture of three of the bones of the skull, four ribs, and rupture of two viscera. Yet he survived for no less than seventeen days, and, in the end, the immediate cause of his death appears to have been inflammation of the meninges of the brain. If the rupture of the spleen had been the only injury, surely he might have recovered.

* *Malaria, its causes and effects, malaria and the spleen, injuries of the spleen, an analysis of 39 cases*. By E. G. Russell, M.B., B.Sc., London, Surgeon, Bengal Medical Service, Civil Surgeon, Kamrup, Assam. Calcutta, Thacker, Spink & Co., 1880.

XI Wounds of Spleen—In the whole number of 9,876 *post-mortem* examinations, only six cases of wound of the spleen are recorded, or 0.06 per cent as compared to 304 cases of rupture without external wound, or one case of wound to every fifty cases of rupture. Being so few in number, these six cases are briefly described below, with a seventh, in which a wound was said to have been inflicted after death.

(i) Dinajpur, 19th April 1883, Mussalman male, 30, said to have been murdered with a knife. There were four wounds, three of which were trivial (description omitted here). The fourth was a wound, 2½ inches long, one inch broad, fusiform, passing between 9th and 10th left ribs near their junction with their costal cartilages, piercing the diaphragm, gastro-splenic omentum, spleen, and part of greater omentum, completely dividing the lower part of the duodenum, and striking left side of spine. Left pleura contained a pint of dark fluid blood and some clot, abdominal cavity contained some fecal matter, 2½ pints dark fluid blood, and 10 oz clot over liver and omentum, stomach full, spleen pierced through middle.

(ii) Dakka, 2nd January 1872, Mussalman male, age not noted, said to have been killed with a needle. Marks of puncture in left hypochondrium. Abdominal cavity contained a great quantity of fluid blood, and a clot weighing 1 lb 15 oz. Spleen weighed 3 lb 15 oz., on its outer surface were punctures corresponding with those in abdominal wall, made by a sharp instrument. The examination was made by Dr J N B Wise, an authority on native customs, who made the following remarks—"Death due to hæmorrhage from puncture of spleen. It is customary for *labrajars*, under certain circumstances, to plunge iron needles into the spleen, when enlarged. This case was an unfortunate selection, as the organ was soft and vascular."

(iii) Dakka, 14th November 1880, Hindu female, 45, said to have died of wounds. A wound between scapulæ, six inches long, one broad, one deep. A second wound between tenth and eleventh ribs on left side, 6 inches long, 1½ broad, penetrating abdominal cavity. Peritoneum contained 4 or 5 concula, stomach protruded through wound, contained half digested rice and *dal*. Spleen escaped through wound, completely divided in two parts transversely.

(iv) Backerganj, 6th May 1885, Hindu female, 25, said to have been killed by a spear. A punctured wound, 2½ inches long by half an inch broad, behind left side of chest. It divided all superficial structures, and ninth rib, near its angle. The wound had penetrated and nearly divided the spleen, and penetrated the stomach at its cardiac end, making a wound 1½ inches long by half an inch broad. Pleural and abdominal cavities both contained quantities of effused blood.

(v) Twenty-four Parganas, 10th June 1887, Hindu male, 40, said to have been murdered. An incised wound four inches long, beginning 1½ inches below inferior angle of left scapula, passing downwards and inwards, penetrating left thoracic cavity, and cutting lower border of tenth rib, lower border of left lung, diaphragm and spleen. Left pleura contained 8 oz fluid blood and some clot, peritoneum contained a small quantity of bloody fluid and some clot, stomach contained a few particles of half digested rice, spleen, an oblique wound, two inches long, cutting through capsule, and one inch deep into organ, about two inches from inferior border.

(vi) Twenty-four Parganas, 27th October 1895, Hindu male, 30, said to have been shot. Two bullet wounds on left loin, ¼ inch apart, and one on left nates, one the size of an eight-anna piece the other two the size of four-anna pieces, margins lacerated and blackened, all three wounds penetrate abdominal cavity, tenth and twelfth left ribs fractured. Peritoneum contained three pints fluid and clotted blood, stomach healthy, contained about 3 oz half digested rice and *dāl*, spleen ruptured, no other viscera injured.

(vii) Mymensingh, 24th July 1879, Mussalman male, 20, said to have been killed with a spear. A punctured penetrating wound in epigastric region, below lower margin of right ribs, penetrating left lobe of liver, and entering spleen. No blood in abdominal cavity. Wound probably inflicted after death.

XII Ruptures of Liver—The liver is an organ which suffers far less often from rupture than the spleen, probably owing to the fact that it is much less liable to great enlargement. While the whole series of 9,876 cases show 304 cases of rupture of the spleen, in nineteen of which the liver was also ruptured, while in 285 that organ was intact, they give only twenty cases in which the liver was ruptured and the spleen uninjured. Adding the nineteen cases in which both organs were ruptured, we get 39 cases in all of rupture of the liver, or 0.39 per cent of the whole series, and one rupture of the liver to seven and a half of the spleen. The nineteen cases in which both liver and spleen were ruptured have already been considered under section No VIII. The other twenty may be briefly noted as follows.

Midnapur, four cases.

(i) Run over by a buggy. 6th left rib fractured, three ruptures of liver, spleen atrophied and indurated.

(ii) Cause not stated, liver slightly ruptured.

(iii) Run over by cart, a rupture, 6 inches long, on upper surface (spleen not mentioned in cases ii and iii).

(iv) Slipped and fell, run over by Jagan-nath car, three left and five right ribs, and both bones of left leg fractured, both pleuræ ruptured, blood in pleural cavities, lower lobe of right

lung ruptured posteriorly, diaphragm ruptured on right side, liver ruptured posteriorly, spleen healthy

Dinapur, one case—

(v) Killed by a kick, liver ruptured

Dakka, five cases

(vi) Killed by a *dhao*, several small gashes on face, 7th to 9th left ribs fractured, abdominal cavity contained a quantity of dark fluid blood, liver, an irregular tear, 3 inches long, in right lobe, a smaller tear in left lobe, spleen of normal size, uninjured

(vii) Run over by a cart, a rupture of under surface of liver, close to gall-bladder, 2 inches long

(viii) Killed by kicks and blows of fist, 2nd to 10th right, and 2nd to 11th left ribs fractured, liver healthy, a stair-shaped rupture of under surface of right lobe, 3—4 inches long, 1 inch deep, spleen healthy, uninjured

(ix) Knocked over by a horse (a child of 6), liver extensively ruptured in three places, all other organs healthy

(x) Beaten to death, a semi-circular rupture, 2½ inches long, ½ inch deep, on upper surface of right lobe

Purnea, five cases—

(xi) Run over, a rupture, 5½ inches long, one deep, on convex surface of right lobe of liver

(xii) Died in a fit, four or five longitudinal lacerations, each about 2 inches long, ½ inch deep, on convex surface of right lobe of liver

(xiii) Killed by a fall, a triangular rupture, 2 inches long and 1 inch deep, of right lobe of liver

(xiv) Cause not stated, liver soft and flabby, two small linear ruptures, each ½ inch long on free edge, plugged with recent blood clot, spleen enormously enlarged not ruptured

(xv) Run over by a cart, a rupture ½ inch long, ½ inch deep, on convex upper surface of left lobe of liver

Backerganj, two cases—

(xvi) Beaten to death with a *lathi*, 2nd to 4th and 7th to 9th right ribs broken, lacerating pleura, liver, a rupture, the size of a rupee on upper surface, caused by broken ribs

(xvii) Beaten to death, a rupture, about 3 inches long, on posterior surface of liver, kidneys embedded in dark coagulated blood margin of right kidney a little ruptured

Mymensingh, one case—

(xviii) Said to have died of suicide by cut-throat, a wound, with ragged edges, 2 inches long, 1½ inches wide, ¾ inch deep, over thyroid cartilage, liver enlarged, contained several abscesses, three small tears on posterior surface of right lobe

Bhagalpur, one case—

(xix) Cause not stated, a tear in line of longitudinal fissure of liver, reaching from upper to lower surface, the two lobes being kept together only by the capsule

Twenty-Four Parganas, one case

(xx) Killed by a kick, a rupture 1 inch long, ½ inch deep, on under surface of right lobe of liver, at anterior margin, running transversely

The most common causes of rupture of the liver, including both those with and without rupture of the spleen, were as follows—Run over, 11 (more than one-fourth of the whole), kicks and blows with the fist, 6, beating, 5, falls, 4, while in 7 the cause was unknown or not stated

This too lengthy paper may be brought to a close with a short note on a case of rupture of spleen in a cow, which I examined at Barisal (Backerganj), on 14th June 1888. There was effusion of blood in the muscles all along the left side of the back, especially behind the left foreleg, a fracture of the bones of the skull, running from the upper end of the left nasal orifice upwards and backwards for 6 inches, a little soft brain matter had exuded from this fracture, fracture of the 7th, 9th, and 10th left ribs, the peritoneum contained a pound of dark blood clot in splenic region, two or three pints of dark fluid blood, and a quantity of chewed grass. The stomach was full of chewed grass, there was an extensive rupture of the right side of its largest cavity. The spleen was ruptured, the laceration extending for a foot along its outer side

SIX CASES OF RUPTURED SPLEEN, INCLUDING A CASE OF SPONTANEOUS RUPTURE OF AN ENLARGED SPLEEN

By C H JAMES,

CAPTAIN, I M.S.,

Civil Surgeon, Umballa

THE rareness of ruptured spleen in England as the only lesion found on post-mortem examination and its extreme frequency in this country, together with its importance from a medico-legal point of view, is, I think, sufficient excuse for publishing the following brief notes of cases which have come under my notice in the Umballa District between October 8th, 1900, and November 29th, 1901, a period of only thirteen months. This is not by any means a criminal district, and violent crime of any kind is rare in the Umballa area. During this period my Assistant-Surgeon and I have only had to perform 35 post-mortems on bodies brought by the police. Some of these proved to have died from "natural causes," or rather from ordinary diseases rather than violence. It is therefore, at first, startling to find that as many as six of these cases, or about one-sixth of the whole, on examination, should prove to have died from rupture of the spleen. This fact

alone makes the matter one of more than ordinary interest and importance, at any rate, for this district. I ought to mention that malaria of a severe type exists in this part of the Punjab and one portion of this district, *viz*, the area lying between Umballa city and Kalka, is notorious from the fact that the population is slowly dying out on account of the malaria there present. The men are said to become sterile after a time, and the few children born there soon become pot-bellied with enlarged spleens, shivelled limbs and wizened faces indicating only too truly the terrible pest which hangs over the whole area.

The census returns of the Umballa District for 1901 show a decrease of population in several of the tehsils. Probably many causes contribute to the decrease, but I am convinced that the large death-rate from malaria is one of them. During the autumn of 1900 no less than 28,520 persons died from "fever" and 1,619 from dysentery and diarrhoea. These latter diseases, we know, tread on the heels of malaria and carry off many whom this disease has left weak and debilitated. The excess of malaria in this district therefore accounts for the chief predisposing cause of rupture of the spleen, namely, an enlarged and softened spleen.

Rupture of a normal spleen, as the only lesion, must be extremely rare even if it ever occurs.

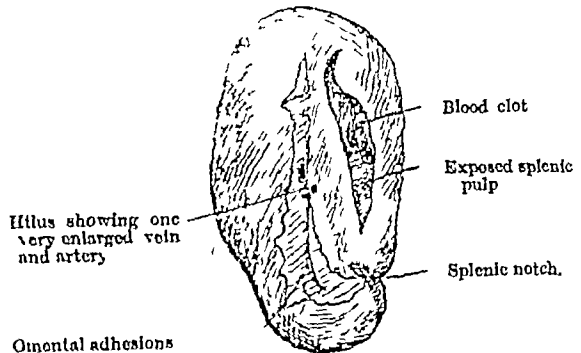
Before making any further comments I will give, as briefly as possible, the notes of the cases.

(1) *Spontaneous rupture of an enlarged spleen*

Ali Bux, a fine-looking old Mohamedan, aged about 50 years, was engaged in a law-suit in the Deputy Commissioner's court on October 10th, 1900. He appeared to be in good health and took a very lively interest in the proceedings in which he was the complainant. While engaged in cross-questioning one of the witnesses, he suddenly became faint, fell down and was carried out of court and expired in the compound. The death was so sudden and so unexpected that the Deputy Commissioner ordered the body to be sent to the Civil Surgeon for examination. The man had been in court the whole morning and appeared to be in perfect health. The friends, who brought the body to the Civil Hospital were most emphatic that he had not received any blow or knock of any kind, and an inspection of the court where he became faint, convinced me that there was no furniture or projecting angles where he could accidentally have knocked against something to cause internal injuries.

On opening the abdomen on October 11th, I found the peritoneal cavity full of a blood-stained fluid. There were also fresh blood clots. The amount of the fluid could not be measured, but probably there were several pints.

The spleen weighed 3 lbs 13 ozs, and measured $9\frac{1}{2}$ inches by $6\frac{1}{2}$, and was $3\frac{1}{2}$ inches thick. On its inner surface, anterior to and parallel with the hilus, was a rent in the capsule, 6 inches in length. The opening was plugged with fresh black blood clot. The substance of the spleen was soft and friable.



Case No. 1—Showing rent in the spleen capsule half filled up with blood clot.

There were no other injuries or signs of disease.

In this case, we have an elderly man, apparently in good health, but who was subsequently found to have an enormously enlarged spleen.

The simple excitement of the law-suit appears to have been sufficient to cause an extra strain on the spleen, whether by causing an undue hyperæmia of the organ, or whether by some slight movement or compression of the abdominal muscles, I will not pretend to say, but the result was disastrous. He suddenly became faint, fell down, and was carried out of the court to die outside. I tried very hard to get a history of even a slight blow, but there were many persons present at the time of the attack, and they were very definite in their reply that the man could not possibly have received any injury.

The large size of the rent in the spleen is also a matter of interest, as it proves that no deductions can in ordinary cases be drawn between the size of the rupture and the force of the blow which causes the injury. In this case we have a very large tear, and yet there was no blow or force of any kind applied externally.

(2) *Rupture of an enlarged spleen from a fall to the ground*

Shib Dyal, a youth, aged 22 years, went out grazing sheep and goats with some other youths, about his own age. One of these pushed him in a scuffle so that he fell heavily to the ground. He became unconscious and had to be carried home, where he died three hours after the accident.

At the post-mortem examination (November 19th, 1900) the spleen, which weighed 21 ozs and measured 8 inches in length, 6 inches broad

and was $1\frac{1}{2}$ inch thick, was found ruptured in two places on the inner surface, at the anterior or rather lower angle. The rents were parallel to each other and in the long axis of the organ and measured $2\frac{1}{2}$ inches and $3\frac{1}{2}$ in length.



CASE No. 2.—Two rents in the capsule on the inner or cardiac surface of the spleen

In this case a fall was sufficient to rupture the spleen, which gave way on its inner surface where the capsule is thinner than elsewhere.

(3) *Rupture of an enlarged spleen probably caused by blows with sticks resulting in two rents in the organ*

Daya Ram was the village blacksmith for Manakpore and was engaged in mending the iron plough-share (*phalli*) of a plough belonging to Inde and Hira, the lambardars or headmen of the village. As he was a long time over the work, the owners, who were anxious to get on with the ploughing of their fields, went over on October 6th, 1900, and saw Daya Ram in his yard and, as a little inducement to make him hurry up, struck him several times with sticks. To their surprise Daya Ram died the same evening.

At the post-mortem examination on October 8th three linear superficial bruises were discovered, one 4 inches long, at the upper end of the sternum, (2) another 2 inches long, above the right eyebrow, and a third on the right side of the chest. There were no bruises of any kind over the region of the spleen, nor was there any injury sufficient to cause abrasion of the skin.

On opening the abdomen, a large quantity of free blood was found occupying the left side and filling even the pelvis.

The spleen was enlarged and weighed 9 lbs 12 ozs. It measured 11 inches in its long axis, and 6 inches from side to side. Its substance was soft and friable. On the outer surface were two rents: the large one was oblique in direction and ran from the anterior border to the upper and outer part of the capsule; the second rent was much smaller, and measured $2\frac{1}{2}$ inches, and was situated at the posterior border. As the spleen lay in the body, both these rents would be almost exactly horizontal when the man was in a standing position. In this instance the magistrate who tried the case brought against

the lambardars gave very slight sentences, as he was of opinion from the evidence produced that no serious assault had been committed or intended. It was unfortunate that the man had such a friable spleen. It is important to note that although bruises were found on other parts of the body none existed over the region of the spleen.

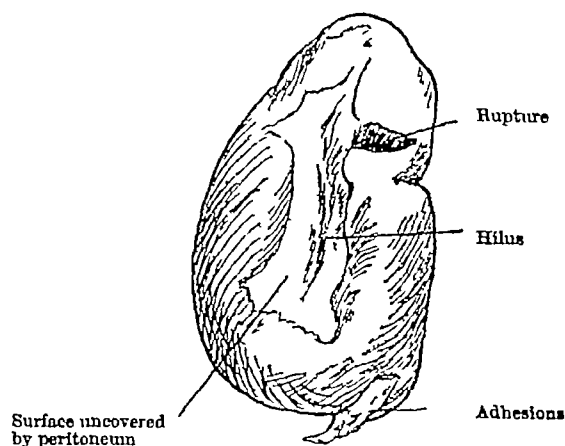
(4) *Sudden death from ruptured enlarged spleen in a woman, cause of rupture unknown*

The body of Mustt Shohi, a Chama woman, aged about 30 years, was brought by the police for post-mortem examination. Nothing was known about the case except that the woman had died suddenly. There were no external marks of violence. About 12 ozs of clotted blood were found in the abdominal cavity. The spleen was found enlarged, weighing 1 lb 6 ozs, and measuring 8 inches \times 6 \times 1.

There were two rents in the organ: one $3\frac{1}{2}$ inches long on the outer surface, and another 4 inches on the inner surface. In this case it is probable that violence of some kind or other was used, as it is difficult to believe that two rents could possibly take place spontaneously and at the same time. The case is given, as rupture of spleen is rarer in women than in men.

(5) *Rupture of an enlarged spleen in a boy aged 16 years due to a blow on the right side of the chest*

On March 1st, 1901, the body of Fattah, a Mohamedan boy, aged 16 years, was brought for post-mortem examination.



CASE No. 5.—A transverse rupture of the capsule

The history given was that the deceased was selling sugarcane in the street, and one Abdool bought some stalks, but finding them worm-eaten, struck the boy with his fist on the right side of the chest and also kicked him in the scrotum. The boy became faint and died shortly afterwards. The post-mortem was done the same day. A slight abrasion of the skin was found on the right side of the chest opposite the 12th rib. There were no other external signs of injury. The abdominal cavity was found to

contain several pints of blood, which was quite fluid and showed no signs of clotting

The spleen measured 7 inches in length, 4½ inches broad, and was 1½ inches thick. There were some adhesions on its internal surface behind the hilus. A rupture 1½ inches in length was found in the cardiac surface running transversely forward, but not reaching the anterior border.

In this case the evidence goes to show that it was an indirect blow which caused the injury to the spleen. It may have been injury by *contre coup* from the blow on the right side or, possibly, the boy fell down and struck his spleen in doing so. In either case the adhesions, which were found, probably assisted by interfering with the mobility of the organ.

(6) *Rupture of a very much enlarged spleen. Fatal hemorrhage from a small wound*

The last case is one of a Mohamedan, aged 30 years, who met with his death in a fight, and therefore it is difficult to determine the exact mode in which the injury was inflicted. There were no external signs of injury. On opening the abdominal cavity a large quantity of blood clot was found mixed with "ascitic fluid."

The spleen was much enlarged and weighed 4 lbs 8 ozs, and the substance was extremely soft and friable. There was a rent on the inner surface near the anterior border, measuring 2 inches in length, and filled with blood clot. The spleen measured 14 inches in length and 9 inches broad.

There were no other signs of injury. In this case a very slight injury would be sufficient to cause rupture of the spleen.

In reviewing these six cases one cannot dogmatize as the number after all is very small, but the following deductions, I think, can safely be inferred—

(1) Very slight injuries are sufficient to cause rupture of a spleen enlarged from malaria.

(2) The size of the rent is no indication of the amount of force used in causing the injury.

(3) The capsule of the spleen may give way at any part, but the inner surface is more liable to tear than the outer. In the above recorded cases, four were torn on the inner, and one on the outer, surface. In one, there were rents on both the inner and outer surfaces. The fact that the capsule gave way on the inner surface in the spontaneous rupture is, I think, an indication that this is the weakest point in this structure.

(4) Haemorrhage from a rupture of the spleen is probably always very profuse.

In conclusion, I wish to lay stress on one point to which I have not before alluded.

In every case where a rent of the spleen is discovered, it should, if possible, be measured before removing the organ from the body. I have noticed that in all the spleens recorded

in this paper the substance is so friable and the capsule so thin that in every case the rent has become much larger after removal. In fact it is quite possible to cause rents, which did not previously exist, by simply handling an enlarged spleen roughly while removing it from the abdominal cavity. This, of course, is not likely to lead to any mistakes in diagnosis, as the haemorrhage into the abdominal cavity, which always accompanies an *ante-mortem* rupture, would not be present.

CRIME IN INSANITY

By G F W EWENS, M D,

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I GIVE short notes of several cases of insane criminals who, though they have undoubtedly been insane at the time of commission of their crimes, yet do not show the ordinary symptoms supposed to be characteristic of mental disease. As illustrative of the fact I wish to call attention to, that, though the insanity of a prisoner usually presents no especial difficulty in diagnosis, there are other instances in which a decision as to the nature of the case is not easy to arrive at.

Legally it used to be generally essential to show that the individual, in whose behalf the plea was set up, could be classed among one of the four great divisions, either as (1) suffering from dementia naturalis—the "fool natural"—whose mind had failed to develop, or (2) from dementia adventitia, which included persons formerly sane who had lost their reason, or (3) the lunatic, the insane possessing lucid intervals, or (4) those who by their own act, such as drunkenness, had temporarily lost their senses—the last not necessarily having any privileges of insanity—and to show his incapacity by proving the existence of delusion and that he was incapable of distinguishing between right and wrong, and knowing the consequences of what he did at the time of the act in question. These distinctions do not, however, embrace all the present known varieties of insanity.

To the lay mind the essential features of madness are those broad salient peculiarities in which the patients differ from ordinary persons, the changes in manner, habits and dispositions from those customary before, the extravagant delusions as to environment and personal identity, the maniacal fury, the restlessness and incessant chatter or the melancholic's depression and silence or the demented fatuous expression and loss of reasoning and memory. Though these features are all characteristic of insanity, it is extremely difficult to embrace all the varieties of mental disease in one comprehensive definition, though the attempts to do so have been very many. A very old one is that of Locke who in the simple

language of his time states that "mad men put wrong ideas together and so make wrong propositions, but argue and reason right from them, but idiots make very few or no propositions and reason scarce at all"—chap XI, para 13, or again declares that "madness is opposition to reason"—chap 33, para 4. Cullen defines it as a prolonged departure without adequate cause from the state of feeling and mode of thinking usual to persons in health. More correctly perhaps Bucknill calls it a disease of the brain affecting the integrity of the mind whether marked by intellectual or emotional disorder, this not being the mere symptom or result of fever or poison. Certainly any definition to include all varieties must account for "an abnormal condition of the intellect or moral nature, or both, caused by cerebral defect or disease not being the passing symptoms of disease nor the temporary result of intoxicants, the disorder being such as to impair or suspend the action of the healthy will." A complete "perversion of the ego," "sufficient power of self-control should be the essence and legal test of insanity if we had any means of estimating it correctly," for undoubtedly a loss of self-control, a state of defective inhibitory power, is the essential feature in all insanity, whether this is recognised in the surrender of the ego to the unreasonable sense of mental depression, the hypochondriacal sensations, the apathy or resistance to the environment or in the submission to the over-powering sense of dread of any of the varieties of melancholia, or whether we see the same in the general exaltation, exhilaration and excitement in cases of mania, the passions arising from disease so characteristic of all its varieties or equally so in the calm conviction without an effort of correction by judgment or reflection, that is such a salient feature of delusional insanity, or in that last stage of all, the failure in varying stages of completeness of volitional, emotional and intellectual power with loss of reasoning and memory that marks the dement or the idiot.

Perfect self-control under all circumstances is, of course, only an ideal condition though the law assumes that all have it, and only make exception in cases of children and insanes. Children, it must be remembered, begin life with no inhibitory power whatsoever, and only develop a power of controlling their desires, emotions and passions as they progress in age, as a result of training and judgment and reflection, aided by the predispositions, the potentialities, call it what you will, which the special heredity of each supplied them with at birth. Some, however, those whose ancestors have been criminals, drunkards and insanes, never develop completely or at all, and then are characterised by a marked intensity of desire and marked weakness of control, usually, it will be found, associated with emotional excess or instability. Such form the origin of some of these debatable cases which

comprise a certain, and, in my opinion, not a small, number of patients who to observation seem to have perfect retention of their intellect and reasoning, who seem to retain the appearances and habits of sane people, but in whom there is either an insane "impulse" to commit some criminal or unsocial act or an incapacity to control furious fits of rage to which they are frequently liable,* or as in others who seem totally deficient in any moral self-control, and who are in fact morally and only morally insane, people who more nearly approach the criminal than the lunatic, who seem to inhabit a border-land between crime and insanity, and whose consideration for a medical man called upon to give an opinion as to their mental condition, is one of extreme difficulty and importance.

The majority of insanes commit acts which would be criminal, immoral, indecent or improper in normal people. The melancholic pays no attention to his dress or appearance, is unclean, often indescribably filthy, as is also the maniac, who is frequently in addition indecent and given to assaulting his attendants or companions, and being wildly destructive and harmful, even taking life in his blind fury or as a result of delusion. The dement is unclean without any sense of proper behaviour or decency, but the insanes I am now alluding to do not have, as an accompaniment of their acts, the marked intellectual aberrations that account for and excuse others, on the contrary, their loss of power of inhibition is the chief and only marked symptom—they may behave and reason, speak and judge perfectly, correctly, yet they will, if suffering from "impulsive insanity," be liable to do some criminal act of theft, arson, animalism or murder simply in obedience to a blind impulse, they declare themselves powerless to restrain or, if belonging to the class of "moral insanes," they may be vicious, cruel, wickedly animal and ungovernable while intellectually bright, even brilliant, and quite free from delusions.

Any crime of any nature may be committed in insanity, but the most frequent in this country, and the one for which our opinion is most often called upon, is undoubtedly homicide, and the considerations in regard to this apply equally to all others. Now an insane may kill a fellow-creature (1) in a paroxysm of acute mania, in wild rage, or in his desire for destruction or to show his strength and power just as he will root up plants and young trees and tear to shreds his clothing and bedding, (2) as a result of delusions believing that his victim is persecuting him, is about to do him more bodily harm or that he is acting within his rights in self-defence or in duty bound, (3) he may do so in melancholia with the idea of saving the person from some greater evil or in obedience to voices he hears ordering him to do so or under delusions

* See Case No 1V

of persecution, &c., (4) murder may be committed (generally of the infant) in all forms of periperal insanity, and (5) it may be, and often is, done in the blind unconscious fury preceding or following an epileptic paroxysm.

I have once seen a case where a man murdered another in the delirium of pneumonia quite unconsciously, and I have met one case of serious injury inflicted in somnambulism. All these, however, present no difficulty of recognition and do not need separate discussion, it is the others where the plea of insanity is suggested, and the patient on examination shows no sign of intellectual derangement that needs very careful consideration. It will be found that these belong to two classes, (1) cases of so-called impulsive insanity, (2) cases of so-called moral insanity. The first class comprises a certain number of patients who complain of an "influence" that overwhelms them, a frantic desire to cut, to kill, to steal, to fire, who say that they have an empowering impulse to commit murder or it may be any other crime—suicide, theft, arson or some lestial act, an idea so morbidly vivid that the will is powerless to arrest it, though they may declare that they struggle against it, that they know and recognise its improper nature (and in this the patients differ from so-called moral insanes), that they had struggled successfully for some time, even in some cases people having sought protection in an asylum against themselves, but that finally this desire, this impulse, this overmastering propulsion, perhaps aided by the sight of some weapon or the recognition of a sudden opportunity, has obliged them to give way. These cases remember all the details of their crime, do not, as a rule, try to escape the consequences, nor do they perform the act in the automatic unconscious manner as do epileptics, nor even as in the form where a homicidal fury takes the place of an epileptic attack, the "masked epilepsy" often described.

Generally these cases, if careful enquiry be made, yield a neurotic family history or one of insanity, convulsions, epilepsy or degeneration, and this is of very great assistance in leading one to form an opinion, while so much the more is one of precedent insanity in the patient himself, but it is always difficult, and usually impossible in this country, to get any family history of a reliable nature. One may be indeed reduced to an examination of the facts of the crime itself, when the patient shows no discernible intellectual derangement to estimate whether this is of such a nature as in itself to give a strong presumption of insanity which indeed sometimes happens, the murder of some near relation, child or sister, known to have been much loved, in cold blood, without a quarrel, in the presence of witnesses even, or it may be in a particularly diabolical manner, the suddenness, uncalled for causeless nature of the act, the absence at all attempts at

explanation, motive, and afterwards (though this only sometimes) of all efforts at concealment or escape, taken with the prisoner's own explanation and considered in reference to his history and character as being totally at variance with such a crime, may all give good grounds for the opinion that the act was one for which the prisoner was not responsible and may be the clearest evidence of his insanity. It is above everything most important to enquire for the man's previous history as there is little doubt that in the vast majority of these cases there has been an attack, even if only a slight transient one, of melancholia or mania, and that these cases are really only varieties of chronic mania markedly characterised by insane "impulse" as their leading symptom.

Excluding such individuals there only remain those affected with pure moral or emotional insanity—a disease in which patients, normal in dress, bearing, speech and appearance and able to reason with full intelligence or without delusions, are totally deficient in moral sense and will commit any crime or some particular one for which they have a natural predilection, from the normal power of inhibition being wanting and the emotional impulses in full and excessive activity, a reversion to the infantile type of mind characterised by utter loss of control, instincts, passions and desires, all being without any inhibition.

With these must be included those cases of emotional hyperaesthesia if I may so term them, men having these passions on the surface in whom the least provocation, the smallest irritation however accidental, trifles that would be passed unnoticed by a sane individual, immediately result in a frightful outburst of passion or rage, a violent emotional storm, a rage in which no sense of right or wrong of obligation, gratitude, affection, will restrain the man from committing murder or deadly injury. The height of the emotional wave being such as to render the desire for some action as an end so powerful as to be quite uncontrollable by any other idea or any effort of judgment that may oppose it.

The large majority of these cases are the result of some previous mental disease the patient has suffered from, it may be years before, from which he has recovered with this lesion of the moral sense, the defective power of inhibition as a permanent defect. Indeed it is questionable whether this condition can ever arise in an adult who has been previously endowed with as much power of self-restraint as ordinary people without some precedent attack of insanity to cause it.

It is an undoubted fact that after any attack of insanity in even so-called complete recovery the patient is almost always left changed, it may be only in some trifling peculiarity, some social difference, the man may be duller, less energetic, or noisier, less industrious, less given to patient application, but a difference there always is, often so slight or unapparent as to be only

appreciated by the more intimate members of his family. Most usually the difference is an emotional one, he or she is more easily put out, is less sympathetic, not so unselfish or thoughtful for others, their habits are not so refined, and there is a tendency to carelessness in general behaviour and in regard for others. There is a direct gradation from slight sequelæ such as these to the absolute loss of all moral sense or loss of all power of control over the passions, the result of which places the unfortunate being under examination as a criminal lunatic. When one lays such stress on the fact of their being no intellectual derangement in these cases, it may be pointed out that it is an open question if this moral emotional insanity is not in itself a proof of impaired intellectual power—a loss of judgment and reasoning capacity. The moral sense—perfect self-control—is undoubtedly a very high mental development and as such is proportionately easily broken down, and one of the first to fail in brain enfeeblement. Whether morality depends on the presence of the supposed moral sense or on the innate brain quality of conscientiousness with which we are credited, or whether it is due to the alternative supposition of obedience to general rules of conduct founded chiefly on utility, the observances of certain conditions of life absolutely necessary for the maintenance of society augmented by others originally founded on sentiment and traditions, the whole made up into a code of conduct—moral behaviour, enforced partly by legal enactments and partly by approval or disapproval, still whichever view we may take it is always necessary for the firm establishment of the moral sense for it to be strengthened by training and the approval of one's own conviction as to its good sense and security. Each of us has learnt our present self-control as a result of constant and prolonged religious and general training from early childhood strengthened when we are able to think for ourselves by the conviction of the necessity for its maintenance from our own judgment and experience, and the more highly this moral, mental and superficial polish progresses, the easier is it for it to fail in any process of mental impairment from the very fact of the maintenance of its high standard needing the constant exercise of a high grade of judgment and reasoning. On the other hand it is urged that it is obvious that intellectual and moral faculties do not rise *pari passu*, that the moral faculties (*sic*) may be excited or depressed by disease as may the natural affections be lessened or suspended, and that we must consider the affection as well as the intellectual faculties as subject to derangement. The affective monomania of Esquirol would include those not deprived of the use of their reason, but with complete perversion of affections and dispositions, able to excuse the impropriety of their conduct by plausible reasons as opposed to cases of instinctive mono-

mania in which the patients are drawn to the commission of acts not determined by reason or sentiment which consciousness rebukes and the will has no power to restrain. Mental disease is like every other division of medicine burdened with the excess of its nomenclature.

Before passing on to the last category of this disease it may be remarked that cases of crime as a result of loss of self-control and emotional disturbance are sometimes met with in the very early stages of general paralysis, so that, though the disease is practically unknown in India, it is always as well to remember such a possibility. It is most important of all to enquire for antecedent attacks of insanity or for a family history of neurotic inheritance. Indeed, it is the opinion of many writers that almost all these cases of emotional or moral insanity are cases of chronic mania with some "impulse" or other permanent emotional defect making them out, generally, it is said, they are accompanied with a certain amount of mental exaltations. The cases of obsession or "fixed idea" or morbid impulse differ from those of defective control, this term being applied to those patients generally of neurotic heritage, who suffer from some constant, fixed or always the same obtrusive idea generally of dread or indecision. Clinically, however, to my mind, there is a clearly marked distinction also between the cases of sudden objectless impulses to kill and those of true moral insanity, more especially as there is still one more very distinct variety of this remaining. We have just spoken of these cases in which patients suffer from a loss of moral sense—having once had it, but having lost it as a result of previous mental disease, but in these last remaining cases the patients have never had any moral sense to lose, they are practically moral idiots—cases of partial developmental arrest, with the animal propensities overriding the intellectual, young, people who, as they progress from infancy to adolescence, fail to develop moral sense or feeling—there being an utter want of every good and honest sentiment, an utter incapacity to perceive right or wrong. These are the *mauvais sujets*, the black sheep of so many families who teach in such unquestionable terms the fact that vicious and virtuous tendencies are alike hereditary, and that each may be displayed from earliest childhood in children subject to exactly the same educational and other influences as are those who become utterly different.

In these cases the intellect is fairly developed and quite unaffected by disease, yet there will be complete moral perversion, the child bright, intelligent, indeed often precocious, growing up to be a vicious, ill-conducted lad utterly unanswering to all forms of education or discipline, perhaps if in a lower station of life developing into an habitual criminal, quite without any feeling of morality, and only actuated either by impulses or by the most selfish, cruel and depraved

motives. It has indeed been said to follow an attack of illness in childhood, such as hydrocephalus or scarlet fever, or an accident such as a fall or blow on the head, but in the vast majority no such connection is traceable, and nothing beyond a neurotic heredity can be alleged as in any way likely to be the cause. It is obvious that these cases merge into those of the ordinary vicious habitual criminal, from whom there is the greatest possible difficulty in distinguishing them, and indeed beyond the family history and the motiveless purposelessness nature of the acts they are constantly committing there can be little else after we have carefully considered their history as a whole that will aid us in giving an opinion, and each case must be decided on its own merits. Undoubtedly there is such a class of cases and such a variety of insanity, treatment with them is hopeless, no improvement is even to be expected when they have once reached adolescence, and the only remedy, as a safeguard to others, is their speedy seclusion within the walls of an asylum or a jail.

Case 1—I give the short notes of the case of a man who following on a doubtful attack of insanity has now for fourteen years been constantly possessed with the desire to kill by cutting, and who has even succeeded in effecting his purpose.

No family history of any kind is available of a reliable nature. At the age of 32 there is a doubtful history of his having been for three months, strange and altered, given to cursing God and the Prophet, with delusions of exaltations, saying that he himself was a Prophet. Following this it was noticed that he had become more irritable and quarrelsome, but this disappeared, and he was thought to be perfectly sane and normal. He is a barber, a friend of the family used to come daily to sit in his shop, and arrived as usual on the 11th July 1887, when quietly, without any warning or provocation, our patient came up behind him and cut his throat with his razor. Since that time up to 1900, when he was transferred here, he had been confined in jail as a criminal lunatic. He is and always has been a quiet well-behaved man, speaking calmly and sensibly without the slightest of the usual signs of insanity, clean decent, intelligent, without delusions or hallucinations, although a fluent liar and a very plausible speaker, but he is, notwithstanding, always trying to secrete knives or sharp pieces of tin, and with this make a murderous attack on some one, his own desire which he seems quite unable to combat being to kill by cutting some fellow-creature. In June, 1900, he somehow managed to get possession of a razor, and without provocation made a murderous attack on a fellow-prisoner. On 30th October 1901 he secreted a piece of iron hoop, and with this unsuccessfully attempted to cut another lunatic's nose off. Since then with stringent supervision he has failed

to obtain means to effect his purpose and has remained the same quiet, intelligent, well-behaved man he has always been for the last fourteen years.

Cases II and III are cases of men who, though otherwise to all appearance sane, are subject to ungovernable rage, in paroxysms of which they lose all self-control.

Case II—I admitted, 1st May, 1901, a Pathan cultivator, a confirmed *charas* eater. The only history obtainable here is that in a fit of rage he shot at his wife, but instead, missing her, the bullet struck his mother-in-law. From the evidence he was acquitted on the ground of insanity. This man, ever since arrival, has been always the same, quiet, self-contained, clean, orderly and intelligent, a good worker without delusions, and indeed without any of the usual sign of insanity. He is, however, if once made angry (and he becomes so from trivialities, which do not affect others) absolutely ungovernable, quickly becomes violently angry, and in his rage will commit murder without the smallest effort at self-control. On one occasion he differed in opinion with another lunatic in the tailor's shop, as to which way the sewing cotton should be rolled, instantly he flew into a violent passion, and was with only the greatest difficulty prevented from murdering the other with a brick. He is when quiet again aware of his failing, though unable to control it, and on this occasion came up himself to the Superintendent to beg that the occurrence might not be entered against him. This, it may be added, he did not from any sense of shame, for it is noticeable that he is quite devoid of any regret for his deeds, for he tells the story of his attempted murder of his wife in a particularly open and shameless way, though equally remarkable for its clearness and coherence. His expression has lately been becoming slightly fatuous, and he is becoming reckless and improvident, giving away his spare clothing, etc. It is possible, like so many of these cases, that he will shortly drift into a condition of dementia, which is the state into which most of these patients tend eventually.

Case III—Is also that of a man who, to all appearances sane, was yet subject to attacks of violent passion in which he was absolutely without any self-control. It is that of M, aged 53 in 1900. With the exception that one brother was addicted to alcohol and committed suicide, no other family history of mental disease or nervous heredity is available. The patient himself denied syphilis or alcoholic excess, though the evidence of others who knew him well was, on the contrary, that he was a heavy drinker. He had lead an irregular wandering life in England, America, and finally in India, where, at the time his history commenced, he had attained to a position of trust and had accumulated substantial means.

There is abundant evidence that he was always regarded as an eccentric, hot-tempered man, and numerous tales were told of his foolish acts committed when in a violent fit of rage arising over some trifle that would not have affected an ordinary individual. His family life was a very unhappy one, constant religious and social disputes arising between himself, his wife and children. As a culmination of this he one day scolded his eldest son, who replying, and as his father stated, raising a gun at him, the prisoner instantly took up a revolver and shot him dead on the spot. The wife hearing a noise came in at once and was in her turn shot dead, the eldest daughter then came in, and he shot her, she, however, escaping with a face wound. He communicated the news of this act in a most matter-of-fact way to the authorities, and was eventually tried and acquitted on the ground of insanity and has remained a prisoner ever since (1893). Now this man has never shown the slightest ordinary symptom such as is supposed to be essential to insanity, he is clean, quiet, most intelligent, an able, business man, very shrewd, with perfect power of judgment and reasoning, free from any delusion, but, on the other hand, he is exceedingly irritable and, when roused, without the slightest power of self-control. He is always one of those restlessly energetic irritable men always requiring constant occupation and distraction, without the slightest power of self-restraint and self-control—trifles that others would bear with equanimity induce in him a furious passion wonderful to behold when, with trembling lips and limbs, dilated eyes and suffused countenance, he is an utterly changed being who would do anything and stop at nothing. As the years went on he became a little less careful of his dress and appearance and not quite so able, and there is little doubt that if he lives long enough his condition will be one of dementia. It is noteworthy that, as in the previous case, this man was also without any sorrow or shame for his crime and would talk openly and without any effort of restraint of his dead wife and son, and that, beyond his regret at his confinement, he never expressed any contrition for his act and never could be brought to see that he had acted in any way out of the common.

Case IV—Is a clearer example of emotional insanity and loss of inhibitory power following on an attack of melancholia—the most frequent type of such cases—and is also another good example of emotional irritability or hyperaesthesia.

J, aged 35, when admitted in August 1896

This man is a Mahomedan cook, originally a camel driver, a resident of Multan, who murdered his wife in August 1895. No particulars as to the nature of the act or whether done under provocation, are given, but as it is stated that he had been insane since April and had been in conse-

quence subjected to the usual native mode of restraint, i.e., tied to a bedstead, and had been so tied on the night of the murder, but had managed to "get loose," it is presumable that he did the act without provocation and, the history of his insanity is very vague, the relatives' chief point being that he was always trying to injure his own head. He was detained in jail some six or seven months, and while there was apparently melancholic, refusing to speak or only answering in a whisper, but at the same time being clean and coherent. On the whole it may be safely concluded that he was suffering from melancholia. At the trial he was deemed insane and unable to plead and was in consequence transferred here. No family history of insanity, &c., is obtainable. Since admission he has shewn no ordinary sign of insanity. He is a strong healthy man of usual appearance, he owns to the murder of his wife and is rather proud of it. He has perfect memory, answers sensibly and coherently, shews no delusions, works well, is clean, tidy, and obviously intelligent. He is, however, without any of the respectful bearing that might be expected from a man of his class, he has an insolent defiant bearing and is very easily made irritable, and on the slightest provocation, or what would be none at all to a normal individual, he becomes uncontrollably violent, will listen to nothing, and quickly works himself up into a most violent rage, talking rapidly and excitedly, using most foul abuse, all of which culminates in a murderous assault on the object of his rage. The conditions gradually become more and more marked from being slight at first now being most pronounced until he has arrived at being considered the most dangerous man in the asylum. In May 1900 he made an utterly unprovoked assault on a feeble *moharrir*, and was only prevented by the attendants from strangling him. In August of the same year he got angry and attacked the head keeper in a most violent manner. After that he remained for about twelve weeks fairly quiet, and was so much improved that he was allowed to work in the weaving shed, but in the spring of 1901, he quarrelled with another lunatic working in the same building, in a few minutes he fell into one of his old rages, and it is said assisted by another lunatic (*Case V*) literally kicked the man to death.

Since then he has relapsed into his old condition, the least restraint, the slightest whim refused, he becomes violently excited, abusive, and obscene, only prevented by actual force from committing murder, and obviously without any form of self-control. With all this the man is clean, decent, tidy, and when not angry, respectful, speaks sensibly and coherently with perfect memory and without delusions or hallucinations, sleeping and eating well and in perfect physical health. Superficially he gives the impression of pure viciousness, for he is an able

him, denies ever having assaulted anyone or ever having given trouble, and complains loudly of not being treated like the other lunatics. From indirect evidence, however, there is no doubt that he does remember the details of rage, and he is certainly not epileptic. His chief characteristic is an extreme irritability, an absolute incapacity to control himself when in the least excited.

It must be remembered that a man of this intelligence knows perfectly well that having been certified as a lunatic there is no punishment that can befall him, he may commit murder, but is quite aware that he will be acquitted on the grounds of insanity. He knows that he is in an asylum now and, that being so, he has reached the ultimate resource of justice, he is fed, well cared for, free from all anxieties, and is naturally absolutely reckless and regardless of any consequences of his actions, a condition which, however it may be regarded, seems under the present condition of things to be unavoidable. As a matter of common prudence, he is now kept in a separate compartment, and it remains to be seen whether the condition of life is sufficiently unattractive as to induce him to make any efforts to improve, such, however, is extremely unlikely.

The fifth and last case does not show these storms of violent rage, but is an example of the last variety of moral insanity from failure of development and shows a condition of absolute reckless viciousness and complete absence of all moral or social feeling so marked as to render it well worthy of description.

Case V—B, admitted 16th August 1899, aged 22 (?)

This man is an habitual criminal who has apparently never in his life maintained himself by honest labour. While in jail for a term of imprisonment for receiving stolen property, he was found so constantly troublesome and given to making unprovoked assaults on the weaker prisoners, being filthy, and utterly unamenable to reason and punishment, that he was finally certified as a lunatic and sent here. Absolutely no previous or family history is obtainable of a reliable nature.

Beyond a certain amount of irritability he showed no sign of insanity, but he was soon found to be vicious, cruel and animal, disobedient and revengeful, tearing up his bedding if checked, and destroying the materials of his work if spoken to. It was considered that his conduct denoted him at that time to be more of a criminal than a lunatic, and he was discharged at the expiration of his sentence in December 1900, but his conduct obliging the authorities to put him under security, he was sent back to jail, and again later on was transferred here with the same history (early in 1901), and since then his conduct has never varied. He is a tall, well built young man of most repellent aspect, being thick-lipped, with one ear cropped, and his face plentifully

scared as a result of old fights and injuries. He is clean, tidy, without any of the usual signs of insanity, that is to say, he speaks sensibly, intelligently and coherently, is without delusion or hallucinations, and works well and skilfully with application when it so pleases him. He sleeps and eats well, is not an epileptic, and is in good physical health. But he is, on the other hand, most vicious, immoral and unprincipled, a fluent liar, a thief, and though a coward, constantly found committing assaults on the weak and helpless lunatics, it is said that he assisted case IV to kick to death the man referred to, he is perpetually endeavouring to commit sodomy, always ill-treating and bullying the weak demented and idiots, and daily concerned in some quarrel or grievance which the others come to complain about, mischievous, disobedient, absolutely unreliable and uncontrollable, the perfect pest of the whole asylum, on whom no training, no kindness, persuasion or threats have the slightest permanent influence.

Now this man's actions have all the appearance of pure viciousness, he has perfect memory, he lies to excuse himself or for some other end, he does not steal from a magpie love of collection, but with a definite end and purpose, he is grossly immoral and his acts of assault and cruelty are always on those weaker than himself and not done out of pure insane impulse or in ungovernable passion. It is doubtful how much they are due to the failure of volition, for when caught and threatened with the deprivation of some privilege or the imposition of a punishment he will remain for some days quiet and orderly, but the effect gradually wears off, and he again follows his old evil courses. In his case his general intelligence is of such a high order as to preclude the possibility of suggesting his act as due to imbecility or weak-mindedness. It may be also pointed out that being so intelligent, it is reasonable to suppose that he would exercise more self-control to escape from his present uncomfortable position, and his failure to do so is a very strong evidence of his insanity. He is certainly irresponsible and incapable of seeing things as others do, and his general conduct for ordinary public security and comfort renders it imperative that he should remain secluded either in a jail or a lunatic asylum, even though his history may always give different observers opportunities for debating as to which particular institution he more properly belongs.

MEDICAL EXAMINATION IN CASES OF RAPE

By ARTHUR POWELL, B.A., M.Ch.,
Police Surgeon, Bombay

In few forensic matters does so much depend on the medical man as in the examination of both accused and complainant in cases of rape.

The examining Surgeon is practically a Court of First Instance as upon his report to the police, the majority of these charges are not further proceeded with.

In the following paper I draw attention to certain matters of importance which are not usually mentioned in the standard text-books, and to other points in which my experience differs from opinions generally held.

The Surgeon must always in the presence of witnesses obtain permission to make his examination from the party concerned, and at the same time caution him that the results of the examination may be used in evidence against him. This applies equally to the complainant and the accused.

Neglect of this warning may expose the Surgeon to a charge of indecent assault.

EXAMINATION OF THE ACCUSED

An important point not mentioned in the text-books is the examination of the prepuce and glans penis. *If the glans be covered with a uniform layer of smegma the possibility of recent complete penetration is negatived.*

I have in two cases where adult women laid charges alleging complete connection, been able to demonstrate the falsity of the charges by this observation.

Too much weight is, I think, generally given to the presence of semen on the clothes or person of the accused. This is evidence only of a recent emission, it may be in connection with another woman.

Screaming on the part of the woman is but poor evidence of the act being done against her will. Should she be caught in a compromising position with one who is not her legal lord. It is obvious her only defence can be that she was forced against her will.

When detected, the most obvious "proof" of her unwillingness is to shout. Only a woman of feeble intellect would neglect to do so.

The police should have instructions never to allow one accused of a sexual offence to wash his person, or retire to a water-closet on any pretext before the Surgeon has made his examination.

A menstruating woman accused a neighbour of rape. He was arrested in her room, but allowed by the police to wash himself.

On examining him I found no trace of blood on his private parts. He quite frankly admitted intercourse, but with consent. He stated the woman only cried out when some friends attempted to enter the room. He added that his penis and hand were covered with blood when arrested, and it was for this reason he went to the latrine and washed.

In India as in Europe the superstition prevails that intercourse with a virgin is a certain cure for venereal diseases.

The younger the girl, the greater is the probability of her virginity, hence a large number

of young children—male and female—are ravished by persons suffering from gonorrhoea.

I have seen a boy, aged ten, suffering from gonorrhoea. His parents alleged he was infected by his ayah in the hope of curing himself of that disease.

It must not be assumed that connection with one suffering from a venereal disease will necessarily result in infection. The odds are against it.

I have known four men have connection with the same prostitute who had a copious gonorrhoeal discharge. Only one became infected.

In another case I knew seven troopers have connection with a woman who had gonorrhoea. Only two were infected.

As I have elsewhere pointed out, the chance of being infected with syphilis is still smaller. Either an abrasion is necessary or the virus must be rubbed forcibly into the mucous membrane or thin skin.

Mr Hutchinson estimates that probably not once in a hundred acts of coition with a syphilitic partner is a chancre contracted.

I once attended a female patient suffering from mucous patches of the vulva. A gentleman who had been "keeping" her for six weeks was greatly alarmed when he discovered her condition. He came repeatedly for examination, but never developed any sore or symptom of syphilis.

In cases of rape on young children, however, there is considerable likelihood of inoculation with venereal sores, as the hymen and other parts are usually torn or abraded.

If the accused be suffering from venereal disease his discharge should be at once examined, and the character of the pus and any organisms therein compared with any found then or subsequently on the victim. At the same time the presence or absence of spermatozoa can be ascertained.

It is the custom to deify the value of microscopical and bacteriological examinations in cases of rape. Most of our text-books still state that it is impossible to distinguish a gonorrhoeal discharge from one due to injury or dirt.

In my opinion the gonococcus is a valuable little witness. We only find it in gonorrhoeal infections, and there is no more evidence that it arises *de novo* in the vagina than that spermatozoa or twins do.

There are, of course, cases of accidental infection, but sexual intercourse is the usual method, and stories of infection from cart-wheels and dirty water-closets should be listened to with the deference they deserve.

In a case where the prisoner infected his victim with gonorrhoea, I stated I had found gonococci in the prisoner and a week after the alleged rape in the girl. Counsel for the defence gravely asked me if cutting a tooth might not give rise to the discharge and the germs. I

replied "No, I had cut fifty-two teeth myself without such a complication"

If the accused be suffering from gonorrhoea, the vagina of the complainant should be searched for spermatozoa and gonorrhoeal pus as soon as possible

A douche should be then given and a second examination for pus and gonococci made an hour or two later. If gonococci be now abundant, on the day of the alleged rape, they cannot be due to that act

A third examination should be made at the end of a week. If gonococci or the soft sore be now present and had existed on the prisoner at the time of the rape, the evidence will be of value

If a man be accused of throwing wheat into a field where formerly there was none, the subsequent growth of wheat in that field is far corroborative evidence

In a case of sodomy I examined the catamite, a boy eight years of age, about an hour after the occurrence. There was a slight recent tear near the anus, which was surrounded by pus. The boy had no ulcer, abscess or dysentery to account for the pus, which contained gonococci and a remarkably large proportion of eosinophile leucocytes. The accused had gonorrhoea in the discharge of which there were gonococci and a similarly unusual proportion of eosinophiles

The next day the boy had no discharge from the anus. A little clear exudation from the tear, showed no unusual character in the leucocytes

When examining for gonococci it is well to take two slides. One is stained with methyl blue, the other with aniline violet, and examined in xylol under a cover-glass. The position of some diplococci is then noted and marked with a finder, Gram's process is then completed. If the cocci be gonococci they will be decolourised

The Civil Surgeon in India is not likely to have serum culture material at hand, but he may inoculate agar tubes. Should diplococci develop they cannot be gonococci

In the intertrigo of children due to dirt the staphylococci, albus and aureus, are most commonly found. In discharges from the vagina bacilli of the colon type are common

In examining stains on cloth for spermatozoa, I have seldom succeeded in finding complete specimens after soaking the fabric in water or glycerine and water as recommended by Taylor. I would strongly advise against attempting the latter method. The glycerine renders the spermatozoa too transparent and prevents their being "fixed" for staining purposes. The dilute muratic acid method is the most satisfactory. Lyon directs you to "squeeze" the fabric. Don't. It

will break up the spermatozoa and render them quite unrecognisable. After soaking the fabric may be gently dabbed on the slide to shake out the spermatozoa

It is by no means easy to recover spermatozoa from stains on cloth. I have frequently failed to get a single complete specimen from undoubted semen stains

The text-books warn us against mistaking for spermatozoa certain weird creatures whose fearsome portraits are enough to make the timid student a confirmed celibate. It is impossible for any one with the least knowledge of histology to mistake these Trichomonads

I have found two varieties of monad in the vagina—a smaller animal, pear-shaped, the body being about the diameter of a blood corpuscle. At one end is a single rod about double the length of the body, at the other end are two flagella inserted at the same spot

The larger monad is about double the diameter of the smaller and varies more in shape. I never could examine it properly as in the living state its movements are too lively. I have never succeeded in staining a fixed specimen. It is hard to count the moving flagella, but there was a single rod at one end, at the other I think there are more than two flagella. I have never been able to see cilia as drawn in Taylor and Dixon Mann's books

The bodies of these monads present a granular appearance and what seems to be a vacuole. Thus, their size, number of flagella and staining reaction must prevent any one mistaking them for spermatozoa. A far more likely error in stained preparations, an error I have known a practitioner make, is to mistake threads of fibrin or broken pus nuclei for spermatozoa

In spreading out smear preparations a nucleus is frequently ruptured, and a long tail-like process drawn out from a round head or body. The uniform tint of the stain should be a sufficient distinction. Lyon gives a full plate drawing of spermatozoa magnified 600 diameters. They are represented much too large

Juries and judges sometimes entertain most romantic conceptions of the hymen. They look on it as a mysterious snare set by a far-seeing Providence to trap the unwary ravisher. It is a seal which no weapon except the human penis is capable of breaking. The slightest touch of this magic wand, and *Heigh presto!* the whole structure completely disappears

Medical witnesses are too often to blame for the slipshod way they describe injuries of the hymen

I once examined a girl half an hour later than and independently of another Surgeon. My note ran "Hymen crescentic round posterior three-fourths of outlet. Two recent raw not

granulating, lacerations, one in median line posteriorly, the second, on left side, eighty degrees distant from first. Both extend from free edge to insertion of hymen."

The other Surgeon stated in his evidence, "the hymen was *completely destroyed*, there must have been complete connection"—statements wholly unjustifiable. No spermatozoa were found by either of us, the injuries might have been as well produced by the fingers, a plantain or any similar weapon. It would have been correct to say "such injuries are usually caused by the first act of intercourse."

In nine-tenths of the cases that come for examination, the victim is a child. If the child be under twelve years of age, connection with or without her consent constitutes rape.

Hence in these cases medical evidence is always taken as to the age of the child.

The Surgeon should note the size and development of the child compared with others of her race and condition of life.

The development of the private parts, of the breasts, of the pubic, and axillary hair.

The evidence of menstruation and puberty, the ossification of the bones, the development of the teeth.

I have in cases of disputed age called in the help of the X-rays to help in diagnosis. The pisiform bone in children over twelve usually shows ossification.

Its absence is strong evidence that the child is under twelve.

When the prosecution fails to prove a child under twelve, a second charge of "kidnapping" or "enticing," sec 361, Indian Penal Code, or of "obtaining a minor for immoral purposes," sec 373, Indian Penal Code, is frequently made, and then the Surgeon has to enquire whether the girl be under or over sixteen.

In this case the following points of ossification may be observed —

Head of the radius which usually appears from the 13th to the 15th year.

The trochlear centre and external condyle of the humerus about 16th or 17th year.

Internal condyle 17th or 18th year, olecranon 16th year.

The centres of the acromion, the border and lower angle of the scapula, two in the coracoid process appear between the ages of fourteen and sixteen. These latter are difficult to observe by the X-rays.

In native girls the average age of puberty is twelve or thirteen, but even in my own experience I have known women of twenty who had not menstruated, and have seen a child, aged four, who had a discharge of blood from the vagina every six or eight weeks. The labia

were large, the breasts as large as the halves of a moderate sized orange.

It is upon the teeth the Surgeon will have chiefly to rely.

Many find a difficulty in distinguishing permanent from deciduous teeth. Taylor says the milk-teeth are smaller than those that replace them. How is the Surgeon to compare? Besides this is not true of the deciduous molars. These are usually larger than the bicuspid which replace them.

The anterior milk teeth are vertical, the permanent are usually inclined somewhat forward. The crowns of the milk teeth are of a white china-like color as compared with the ivory white of the permanent. The junction of the crown with the fang of the milk tooth is usually marked by a ridge which is not seen in the permanent. "Mercurial" teeth and Hutchinson's teeth must be of the permanent set.

With a view to ascertaining the period of eruption, I have examined the teeth of many hundreds of native children the date of whose birth have been registered.

The statistics are very bulky, but I hope to publish them when condensed. The following table briefly embodies the results —

The first molars appear with great regularity in the sixth or seventh year. Of 41 children, aged seven, all had their first permanent molars.

The central incisors appear during the seventh, the lateral at the eighth or ninth year. All nine-year old children, natives, Jews and Parsis, had all the incisors permanent. Of ten Europeans aged nine, one girl had not shed her lateral milk incisors.

The canines shewed greater variation in the time of eruption. They usually appear during the eleventh or twelfth year. I have seen permanent canines in a child of nine.

The anterior bicuspid appear in the ninth or tenth, the posterior from the tenth to twelfth year. The second molars come with great regularity in the eleventh or twelfth year. They may appear earlier, but I have never seen a Hindu or Mussalman child of twelve without second molars.

I have seen two Parsis, aged 12½, without permanent second molars.

I have seen wisdom teeth in Hindu children aged 13½, 13¾ and 13⅞.

A few extraordinary irregularities may be found, but such freaks do not invalidate the general rules.

Children may be born with teeth. I have known a European cut a wisdom tooth at thirty-six.

Ackery quotes a case of temporary molars retained at 63, and Salter quotes a case of the same teeth being retained at 65.

I give below a table comparing my observations on Natives of India with the figures quoted in European text-books

	Powell for natives of India	Saunders *	Pedley	Gray	Mann †
First Molar	6th to 7th	8th	6th	7th	7th
Central Incisor	7th	9th	7th	7th	8th
Lateral „	8th to 9th	10th	8th	8th	9th
Canine	10th to 13th	13th	11th to 12th	11th to 12th	11th to 13th
Anterior cuspid	9th to 10th	11th	9th	9th	10th
Posterior cuspid	10th to 12th	12th	10th	10th	11th to 15th
Second Molar	11th to 12th	13th to 15th	12th	12th to 13th	13th to 16th
“Wisdom”	14th to 27th	15th to 25th	17th to 25th	17th to 21st	18th to 30th

* Taylor, Tidy and Lyon give the same figures. Taylor and Tidy acknowledge Saunders as their source.

† Vivian Poore gives exactly the same figures as Mann, but makes no acknowledgment.

In Natives of India a few exceptions may be found to my figures. These exceptions will be found on the precocious side. The cases in which teeth appear at later dates than those given will be rare indeed.

MEDICO-LEGAL NOTES

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Cases illustrating early appearance of signs of advanced decomposition of dead bodies in hot and rainy seasons

(1) A Mahomedan female, aged 42 years, was poisoned with *dhatura*, she died at about noon of 9th May 1901. Her body was examined at 8-30 A.M. the next day, i.e., twenty hours and a half after death. Signs of decomposition. Body muscular, swollen and emphysematous, face of dark bluish colour, bloody froth escaped from the nostrils and mouth. Several vesicles appeared on the swollen arms, neck and chest. Abdomen distended, escape of faeces through the anus, scalp discoloured. The brain was soft, pulpy, and could not be removed from the cranial cavity. The lungs were of dark bluish colour, vesicles appeared on their surfaces. The heart, the liver, the kidneys and the organs of generation were decomposed.

The temperature on the day of her death was 89°F, maximum temperature, 105°F, the minimum temperature, 79°F, the wet bulb thermometer stood at 68°F.

(2) A Hindu male, aged 30 years, was severely assaulted by a *lathi*, and died between 5 and 6 P.M. on 21st October 1900. His body was examined 15 hours after death. Signs. Body stout and muscular, abdomen distended, frothy fluid issued from the nostrils and mouth. The brain was soft in consistence. The heart, the liver, and the kidneys were discoloured and softened, the intestines and the peritoneum were slightly decomposed.

The maximum temperature was 86.5°F, the minimum 71.5°F, the dry bulb thermometer showed 80°F and the wet bulb 75°F.

(3) A Hindu male, aged 40 years, was beaten to death. He had several wounds and fractures on his body. He died on 30th May 1901 between 5 and 6 A.M. Autopsy at 3 A.M. on the next day, i.e., 26 hours after death. *Post-mortem* appearances. Body stout, muscular, swollen and emphysematous, abdomen distended, vesication on the left thigh and leg, the brain was soft in consistence, the lungs, the heart, the liver and the kidneys discoloured and softened.

The temperature was 82°F, the maximum, 86°F, the minimum, 76°F, and the wet bulb, 77°F.

(4) A Hindu male, aged 37 years, was severely assaulted and died between 5 and 6 A.M. on 30th May 1901. His body was examined 28 hours after. Signs. Body stout and emphysematous, faeces escaped from the anus, abdomen distended, a few bullae appeared on the left thigh. The brain was soft in consistence. The lungs, the liver, the spleen and the kidneys were discoloured and softened.

The temperature was the same as mentioned in the previous case.

(5) A little girl, four years old, died between seven and eleven o'clock A.M. on 8th July 1898, from compound fracture of the skull, the result of *lathi* blows. *Post-mortem* examination was held at 9-30 A.M. on 9th July 1898, i.e., at least twenty-six hours and a half after. Signs. Abdomen distended and of greenish colour, left side of the face of dark bluish colour. The brain was of soft consistence, a few small vesicles on the surface of both the lungs, the heart was discoloured and softened, vesicles appeared on the surface of the liver, which was of dark bluish colour, the kidneys decomposed.

The temperature was 89.5°F, the maximum, 94.5°F, the minimum, 81°F, wet-bulb, 83.5°F.

(6) A Hindu male, aged 40 years, died at about 8 P.M. on 2nd July 1900, from fracture of the skull from *lathi* blows. Autopsy 37 hours after. Signs. Body swollen, discoloured and crepitant, face and both the arms of dark bluish colour, cuticle detached, and bullae appeared on different parts of the body, eyes swollen, the tongue protruded, escape of faeces from the anus, abdomen distended, the hairs on the head easily detached, sanguineous fluid flowed from the nostrils, the superficial veins on the neck and

head prominent, the brain was soft and pulpy and of reddish colour. Both the lungs decomposed, blebs formed on their surfaces. The heart was soft in consistence. The mucous membrane of the stomach was of dark brown colour. The liver, the spleen, the kidneys and the generative organs were discoloured and softened.

The temperature on the day of death was 82°F, the maximum, 92°F, the minimum, 77°F, on the next day the temperature 84°F, the maximum 95°F and the minimum 81°F.

(7) A healthy Hindu woman, aged 50 years, committed suicide by taking opium. She died between 3 and 6 A.M. on 20th June 1901. Her body was examined at 10 A.M. on 21st June 1901, *ie*, at least 30 hours after. *Post-mortem* appearances. Body stout, muscular and emphysematous, abdomen distended, face swollen and of dark bluish colour, escape of sanguineous fluid from the nostrils, and of fæces from the anus. The brain was softened. The heart, the liver and the kidneys were discoloured and of soft consistence.

The temperature was 88°F, the maximum, 103°F, the minimum 82°F, and by the wet bulb thermometer 82°F.

(8) A Hindu male, 35 years old, quarrelled with another man and was assaulted. He died from acute peritonitis caused by violence on the abdomen at midnight on 15th March 1901. Autopsy 32 hours after death. Signs. Body swollen and crepitant, some blebs appeared on the abdomen, sanguous frothy fluid issued from the nostrils and mouth, face swollen and of dark bluish colour, the superficial veins on the neck and face prominent, fæces escaped from the anus, abdomen distended, the living membrane of the trachea was of dusky red colour. The heart, the liver, the spleen and the kidneys were discoloured and softened. The organs of generation were swollen and decomposed.

The temperature was 69°F, the maximum, 85.5°F, the minimum, 57°F, and by the wet bulb, 57.5°F.

(9) A Hindu male, aged 50, was struck with a sword on the head and on other parts of the body, the skull was divided and the substance of the brain protruded. He died between 2 and 5 P.M. on 1st September 1900. Autopsy at 9 A.M. on 3rd September 1900, *ie*, at least 42 hours after death. *Post-mortem* Appearances—Body swollen and emphysematous, abdomen distended, the superficial layers of the skin detached from the cutis on several parts of the body. The brain was softened and could not be removed from the cranial cavity, the surface of its left hemisphere was of greenish hue, bullæ appeared on the surface of the lungs, the heart, the peritoneum, the liver, the spleen, the kidneys and the organs of generation were decomposed.

The temperature on the day of death was 83°F, the maximum, 88.3°F, the minimum, 79.5°F, the wet bulb, 80°F, on the next day, the maximum, 89°F.

(10) A Mahomedan male, aged 30 years, was stabbed in the chest with a knife at about 10 P.M. on 21st April 1899. The heart and the lungs were wounded. He died the same night a few hours after. His body was examined at 7 A.M. on 23rd April 1899. Signs. Body stout and crepitant, abdomen distended, fæcal matter escaped through the anus, bloody froth issued from the nostrils, the face was of dark bluish colour, the brain was very soft and could not be removed entire. The heart, the peritoneum, the liver and the kidneys were decomposed.

The average temperature on the day of death and on the next day was 84°F, the average maximum, 98.5°F.

(11) A Hindu male, aged 45 years, was struck with a sword in different parts of his body. He had several incised wounds. He died on the afternoon of 1st September 1900 between 3 and 5 P.M. Autopsy at 9 A.M. on 3rd September 1900, *ie*, at least 41 hours after.

Signs. Body swollen and emphysematous, the face was of dark colour, blebs appeared in different parts of the body, the epidermis detached on several places, the tongue protruded—the superficial veins on the arms distinct, abdomen distended, the fæces escaped from the anus. The brain was very soft and could not be removed from the cranial cavity, vesication appeared on the surface of the lungs, which were discoloured. The heart, the liver, the spleen, the kidneys and the generative organs were decomposed.

The maximum temperature on the day of death was 88.3°F and on the next day 89°F, the dry bulb thermometer 83°F and 84°F, the wet bulb 80°F.

(12) A Hindu male, aged 22, was stabbed on the abdomen. The stomach and the intestines were wounded. He died at about midnight on 1st June 1899. His body was examined at 7 A.M. on 3rd June 1899, *ie*, 31 hours after. *Post-mortem* appearances. Body muscular, swollen and crepitant, the abdomen distended, blebs appeared in different parts of the body, sanguineous fluid issued from the nostrils, fæces escaped through the anus. The brain was very soft and pulpy, and could not be removed from its position. Several bullæ formed on the surface of the heart, the lungs, the liver, and the spleen, which were all discoloured and softened.

The temperature was 88.5°F, the maximum, 107°F, the minimum, 82°F, the wet bulb, 83°F.

(13) A Hindu male, aged 35, was wounded on the neck, the right carotid vessels was divided. He died at about 9 P.M. on 2nd April 1898. Autopsy 34 hours after. Signs. Body muscular swollen and emphysematous, several blebs on the chest containing thin, sanguineous fluid, the cuticle detached at parts, the abdomen distended, fæces escaped from the anus, several bullæ appeared in the inner coat of the stomach. The scrotum was swollen and discoloured.

The temperature was 93° F, maximum 104° F, the minimum 73° F, the wet bulb 69° F

Remarks -- In these cases the earliest period of appearance of vesication on the surface of the body was *within* twenty hours and a half after death in the month of May, and within 31 hours in June, and that of decomposition of the internal organs, and of development of gaseous products, as manifested by the distension of the abdomen, or by the exudation of froth from the mouth and nostrils, was *within* fifteen hours in October. The shortest period for formation of gases recorded in cases observed in the Campbell Medical School, Calcutta, in 1883,* was sixteen hours and ten minutes in October, and of appearance of vesicles on the body 35 hours in July. The soft pulpy condition of the brain for which the organ could not be removed entire from the cranium occurred *within* twenty hours and a half in May, within 31 hours in June, 37 hours in July and 41 hours in September. All the signs of decomposition were really manifest earlier than the time noted, because they appeared *within*, and not exactly *at*, the hours mentioned. The circumstances which affect the progress of decomposition are of a variable character. Though it is difficult to determine the period of death from the progress of putrefaction, these observations may, however, prove a useful guide to infer the time of death.

II

Two cases of suicidal out-throat severe injuries in one transverse cuts in both

(1) A Hindu male, aged 35 years, committed suicide in the court lock-up, Bankipore, on 17th July 1897, by cutting his throat with a knife. His body was examined the same day. Marks of injuries a *transverse* incised wound in front of the neck, about five inches long and four inches broad, reaching down to the spine, the trachea was divided just below the cricoid cartilage, the œsophagus and the right carotid artery were cut through. The divided portions of the trachea were much retracted.

Such suicidal injuries from their situation, direction, and depth are not common.

(2) A pregnant Hindu female, aged 20 years, attempted to commit suicide by cutting her throat for severe agonising pains during delivery. She really died from rupture of the uterus. *Post-mortem* appearances *transverse* cut in front of the neck below the Pomum Adam, 2½ inches long, the skin was divided. The uterus was enlarged and ruptured at the cervix anteriorly, causing a large aperture to allow the foetus to pass into the abdominal cavity, where it was lying with the back and buttocks anteriorly, enveloped in the membranes partly torn and resting on the chest over the uterus which was compressed, the direction of the rupture was

transverse, the lower segment encircling the neck of the foetus, the edges of the tear softened, infiltration of blood in the muscular fibres which looked gangrenous. The head of the foetus protruded through the vagina, the uterus was empty, the fundus contracted, lying above the pelvic cavity. The foetus was full grown.

The suicidal wound on the throat was *transverse* and not oblique.

III

The length of time required for digestion of Indian food in the stomach and its medico-legal import

The presence of undigested food, or absence of food, in the stomach, is sometimes a great criterion, in medico legal cases, for judging the time at which a murder was committed, or death occurred. Thus material help may be obtained by the judicial officers in arriving at a judgment in criminal cases in which the time of death has an important bearing on the question of the guilt or innocence of accused persons. Medical witnesses are often asked in judicial courts as to the nature and condition of the contents of the stomach and on the length of time required for digestion of food.

The people of Bengal and Behar ordinarily take two or three meals a day, consisting of rice, *dāl* (pulses), wheaten flour, vegetables, fish or meat, the latter two are luxuries amongst the poorer classes. Rice forms the bulk of their food. The quantity of boiled rice taken by an adult in each meal varies from 24 ounces to 48 ounces (the weight of a given quantity of raw rice becomes about three times greater when cooked), of cooked *dāl* 12 to 18 ounces, of vegetable curries 6 to 8 ounces. They drink a good quantity of cold water during or immediately after meals, which averages at least 16 ounces, except during hot weather when it is more. The length of time requisite for digestion in the stomach of such an Indian diet and for complete emptying of the stomach, has not been ascertained by observation, or on any authoritative basis. The average period required for the digestion of an ordinary European meal was estimated at from three to four hours from observations made by Dr Beaumont in the case of Alexis St Martin. But European and Indian diet differs greatly in quantity and quality, the former consisting mainly of nitrogenous substances, and the latter in a majority of cases almost entirely farinaceous. The solvent powers of the gastric juice are chiefly exerted upon nitrogenous substances and its action is comparatively slight upon starchy and saccharine matters. The rapidity of digestion varies according to the quantity of food taken and the amount of fluids drunk. The Indians generally consume a large quantity of farinaceous food and drink largely of cold water, which, by lowering the temperature of the stomach and diluting

* See below p 255 —ED, I M G

the gastric juice, is prejudicial to digestion. Hence the time required for complete gastric digestion of Indian diet may exceed that for European diet. It may be contended that starchy food requires less time for digestion than the nitrogenous. This may be true when the quantity of it is small as in European diet. An idea of the time necessary for complete digestion (gastric) of an ordinary Indian diet may be formed from the following observations made after death in some cases, and during life in others —

A — Presence of food in the stomach noted during post-mortem examinations

(1) A healthy man, aged 35 years, took his morning meal (stale rice and *dāl*) between 7 and 8 A.M., and went out to work in his rice-field. There he quarrelled with another man who gave him blows and kicks at about 10 A.M. on 3rd February 1902. He died the same day at about 2 P.M. from rupture of the spleen. *Post-mortem* examination held on the next day disclosed the presence in the stomach of a large mass of undigested and partially digested rice and *dāl*, and in the duodenum thick, white, glairy fluid and several bits of rice. The man was alive for about six hours after taking his meal and four hours after rupture of the spleen. The process of digestion might have been suspended or retarded by internal hæmorrhage, but his farinaceous food was not digested even in less time than that required for digestion of European diet, *i.e.*, in two hours after his meals and before he met with violence.

(2) A Hindu male, aged 22, after his usual evening meal between 8 and 9 P.M., took some opium to commit suicide. He died next morning between 5 and 6 A.M. *Post-mortem* examination was held the same day. The stomach was full of undigested rice *i.e.*, about nine hours after food.

Digestion was in this case probably in abeyance during coma.

(3) A Mahomedan male, aged 28, a lunatic, took his meal between 10 and 11 o'clock A.M., on 22nd January 1902, which consisted of rice *dāl* and vegetables. He got an epileptic fit at about 2 P.M. the same day and was unconscious till he died between 5 and 6 o'clock P.M. on 23rd January 1902. During the period of unconsciousness he could not swallow medicines or liquid nourishment. *Post-mortem* examination showed that the stomach contained a large mass of partially digested and undigested rice and *dāl* mixed with mucus. (More than half of the cavity of the stomach was full.)

The food remained in the stomach for nearly 30 hours without undergoing digestion. The digestion was in suspension owing to insensibility. His food was not even digested in four hours before the attack of the epileptic fit.

(4) A stout, healthy, Hindu male, took his evening meal at about 10 P.M. and was beaten to death between 5 and 6 o'clock in the morning of 30th May 1901. The stomach contained, as disclosed by *post-mortem* examination, a small mass of undigested rice, about one ounce in weight, and a few bits of potato rind.

The food was not completely digested in seven hours.

B — Observations on the washings of the stomach of healthy men a few hours after their meals

(1) A Hindu male, aged 25 years, a cook by profession, took his meals consisting of boiled rice 48 oz., cooked *dāl* including the water in which *dāl* was boiled, 16 oz., and vegetables 4 oz. at 12-15 P.M. on 15th January 1902. His stomach was washed out with an India-rubber oesophageal tube at 3-15 P.M., *i.e.*, three hours after meal. About half an ounce of undigested rice was withdrawn. The openings of the tube were blocked up with particles of undigested rice. The tube was not re-introduced. On 18th January 1902 at 11-10 A.M. he took rice 48 oz., *dāl* 12 oz., vegetables 8 oz., and drank 16 oz. of water. The stomach-tube was passed at 3-15 P.M., *i.e.*, 4 hours and 5 minutes after. About an ounce of undigested rice was brought out. The tube was twice introduced. On 20th January 1902 he was fed at 11-32 A.M. with 48 oz. rice, 8 oz. *dāl*, 8 oz. vegetables, and 16 oz. water. The stomach was washed out at 4-45 P.M., *i.e.*, 5 hours and 13 minutes after meal. Entire and broken rice grains, numbering 250, flowed out with the washings. The openings in the tube were blocked up with rice. He consumed on 24th January 1902 at 10-50 A.M., 48 oz. rice, 8 oz. *dāl*, vegetables 4 oz., and water 16 oz. The tube was used at 5-15 P.M., *i.e.*, 5 hours, 25 minutes after. Undigested rice grains, about 200 in number, flowed out with the water. The openings of the tube were filled with rice. The tube was not passed a second time. On 25th January 1902 at 9-25 A.M., the man took the same quantity of food as on the previous day. At 4-50 P.M., *i.e.*, 7 hours, 25 minutes after, the stomach was washed out. A few entire and broken grains of rice and a soft pulpy mass of it mixed with mucus flowed out. The tube openings were blocked up.

(2) A tall, stout, Hindu male, 32 years old, was fed at 11-32 A.M. on 20th January 1902, with rice 48 oz., *dāl* 8 oz., vegetables 8 oz., and water 16 oz. At 4-34 P.M., *i.e.*, 5 hours, 2 minutes after, entire and broken rice, about 200 in number, was found in the washings of the stomach. The openings of the tube were blocked up with particles of rice. The tube was not re-introduced.

(3) A healthy, Hindu male, a mason, took his food at 12 A.M., on 30th January 1902, consisting

of rice 2 lb 2 oz, *dāl* 9 oz, vegetables 4 oz, and water 12 oz. The stomach was washed out at 3-20 P.M., *i.e.*, 3 hours and 20 minutes after. About an ounce of undigested rice was found in the washings. He was fed at 11 A.M., on 3rd February 1902, with rice 3½ oz, *dāl* 9 oz, vegetables 4 oz, and water 16 oz. At 5-5 P.M., *i.e.*, 6 hours, 5 minutes after, the stomach washings contained about 2 drachms of undigested rice. On 12th February 1902 at 10-30 A.M., he took *chappattis* made of 16 oz *atta* (coarse wheat flour), *dāl* 9 oz, vegetables 5 oz, and water 16 oz. At 5-5 P.M., *i.e.*, 6 hours, 35 minutes after, his stomach was washed out. Soft bits of vegetables, and a small, soft lump of semi-digested *chappatti* came out with water. He took at 10-30 A.M., on 19th February 1902, rice 35 oz, *dāl* 9 oz, vegetables 4 oz, and water 16 oz. The tube was used at 4-45 P.M., *i.e.*, 6 hours and 15 minutes after. A few bits of entire and broken rice flowed out with water.

(4) A healthy Hindu male, aged 25, took, at 12 A.M., on 30th January 1902, rice 2 lb 2 oz, *dāl* 9 oz, vegetables 4 oz, and water 16 oz. The stomach was washed out 3 hours and 25 minutes after. During introduction of the tube the man vomited and brought up about two ounces of undigested rice. The same quantity of food was given to him on 3rd February 1902 at 11 A.M. The washing was commenced at 5-10 P.M., *i.e.*, 6 hours and 10 minutes after meal. Two drachms of undigested rice were found. The openings in the tube were blocked up. During its reintroduction he vomited and brought up 3 drachms of rice.

(5) A Hindu male, aged 22, took on 12th February 1902 at 10-30 A.M. *chappattis* made of 16 oz *atta*, *dāl* 9 oz, vegetables 5 oz, and water 16 oz. The stomach was washed out 6 hours and 40 minutes after meal. Four small bits of semi-digested *chappatti* flowed out. The man vomited a few bits. When the tube was withdrawn, its openings were found blocked up.

(6) A Hindu male, 20 years old, was fed with *chappattis* of 16 oz of *atta*, *dāl* 4 oz, vegetables 4 oz, and water 12 oz, at 11-45 A.M. on 7th February 1902. The stomach was washed out at 4-15 P.M., *i.e.*, 4 hours, 30 minutes after. Two large and a few small soft lumps of *chappatti* and water came out.

(7) A Mahomedan male, aged 20 years, took at 10-30 A.M., on 19th February 1902, 35 oz rice, 9 oz *dāl*, 4 oz vegetables, and 16 oz water. The tube was passed at 4-52 P.M., *i.e.*, 6 hours and 22 minutes after. A few entire grains of rice, about one drachm, flowed out. The openings of the tube were found blocked up when it was withdrawn.

Remarks—The men did not take any food between the hours of their meals and that of the washing of their stomachs. In all cases a little more than a pint of warm water was

passed into the stomach. When the tube was withdrawn, its openings were seen blocked up with particles of food. This evidently showed that more food existed in the stomach than what was withdrawn. The blocking up of the tube with food grains no doubt prevented their further exit. The appearance of even a small quantity of undigested food in the washings of the stomach *seven hours and twenty five minutes after meals* was sufficient to demonstrate that food was not *completely* digested, and the stomach was *not* empty, in that period.

IV.—Homicidal wounds ending in tails

—It is said that the presence of a scratch, *i.e.*, a tail at one or both ends of an incised wound sometimes indicates that it was fabricated, *i.e.*, inflicted with a person's consent or self-inflicted. But such scratches have been found in wounds inflicted by hostile hands or in homicidal wounds.

(1) A man, aged 32, was severely wounded in several parts of his body. He had an incised wound, transverse in direction, about 5 inches long, on the left side of the neck, the hyoid bone, and the thyro-hyoid membranes were out, and the pharynx opened. It had a *scratch* at its outer end. Another incised wound on the left side of the chest below the nipple, transverse, 5 inches long, the cartilage of the seventh rib was divided, the thoracic cavity was opened and the sternum partially divided, a *tail* at its inner end, 2½ inches long. Beside these he had cuts on the hands and on other parts of the body.

(2) A well-to-do elderly Mahomedan male, a Nawab, was murdered in broad daylight while he was asleep. He had an incised wound on the right shoulder, almost vertical in direction, about 4 inches long, the clavicle was divided, a *tail* at each end of the wound. Another vertical superficial cut on the right wrist, 2½ inches long, a *scratch* at its lower end. Besides these he had three severe wounds on the head, in which the skull and the substance of the brain were divided, severe cuts on the hands and on other parts of the body.

(3) A healthy, young man, aged about 30 years, was killed in a riot amongst some villagers. He had an incised wound behind the left shoulder, 4 inches long, vertical in direction, the muscles and the acromion process of the scapula were divided, a *scratch* at each end of the wound. Another transverse incised wound on the right side of the back, 3½ inches long, the skin was divided, a *scratch* at each end. Also he had a large incised wound on the thigh, in which the femoral vessels were divided, and severe cuts in other parts of the body.

I am much indebted and grateful to Major F. P. Maynard, M.B., F.R.C.S., I.M.S., the Civil Surgeon for his kind encouragement and instructions given in carrying out the operations of washing out the stomach in the cases mentioned above.

MEDICAL EVIDENCE IN INDIA

By A G HENDLEY,

MAJOR, I M.S.,

Civil Surgeon, Dhangabad, C P

THE Psalmist who said, in his haste, that all men were liars, and the learned judge who, at his leisure, classified witnesses as "Liars, d—d liars, and scientific experts," were each, in his own way and in his own time, simply giving somewhat exaggerated expression to the regrettable fact that, given sufficient inducements, a vast majority of mankind are very prone to take refuge in what the little Sunday-school boy defined as "an abomination unto the Lord, but a very present help in time of trouble," viz, a lie. Now, however widely these views of Psalmist and judge may be accepted as applicable to humanity in general, one bright exception to the general rule must be made in favour of the medical witness or expert in India, who, if only by reason of the date of his evolution and habitat, *could* not have been included in either Psalmist's or judge's sweeping generalizations.

I say *in India* advisedly, for between the positions of medical witnesses in India and England there are differences, and in consequence of these differences there arises, in my mind, a grave doubt as to whether the procedure in force in England and copied in India, for taking medical evidence, is the one best suited to the very dissimilar circumstances of this country, *e.g.*, in England, medical witnesses of equal attainments, and presumably of equal integrity, may be seen, in one and the same case, but on different sides, giving diametrically opposed opinions on the same facts, or even differing as to facts themselves. Such a spectacle is practically, and fortunately so, unknown in India.

Again, in England, prosecution and defence are, *equally*, always in a position if dissatisfied with medical evidence given in court, to call other experts to counteract or possibly nullify it and before the case comes into court to consult experts on points likely to come up in evidence.

In India, this is very seldom practicable, for the obvious reason that the District Medical Officer is, as a rule, the one solitary expert available, the one witness of his class, who, with a fair field and little danger of contradiction, is free to depose to the court, according to his lights and certainly without basis his opinions on facts observed by himself or put to him for consideration on account of these differences and because, as yet, in India we are free from that class of medical expert *who is in the habit* of giving expert evidence, at say, fifty guineas a day, we can, I think, safely claim for the medical expert in India, a far higher, more

unbiased and generally disinterested status than it would be safe to assume in England.

Again, in India, the cross-examination of medical witnesses is, as a rule, so unintelligently conducted, in consequence of the want of previous coaching by a medical expert, outside the court, as to what is relevant and what is not, that, in the majority of cases, it might profitably be dispensed with. The Judge himself, misled by a belief, almost childish, in the medical expert's omniscience (not as a rule, one of an English judge's failings) frequently spoils the value of the latter's evidence by his obstinacy. He does not want opinions or probabilities, he wants sworn facts, he wants, to know if this is possible, if that is impossible. He often wants, in fact, impossibilities! How impossible, irrelevant and absurd are the points that the medical man of this country is often called on to decide must be painfully evident to any one with any experience, *e.g.*—

What Civil Surgeon is there who is not familiar with the following police case, or something very like it?

1 A very old man, with his last front tooth wrapped in paper (Exhibit A), and a hole in his gum (Exhibit B)

2 A boulder, weighing about a maund (Exhibit C)

3 A small boy (the accused)

All sent for examination, with a "request that he will report, if the tooth belongs to the old man, if so, whether it was knocked out of the hole (B) by the boulder (C), and if so, whether the boulder was thrown at the old man by the boy, and if so, whether the stain on the boulder—marked—is blood, and, if so, whether it is human blood, and whether he can say whether the small boy was standing north, south, east or west of the old man when he threw it, etc, etc, etc."

If he is not subsequently cross-examined in court as to what coloured puggaree that small boy was probably wearing at the time, he will have escaped easily!

I have been asked to examine scratches (very slight scratches) on a prisoner's legs and to report "whether they might have been occasioned by scrambling through a bush fence?"

I reported, after considerable deliberation, "that they certainly *might* have been caused in the manner suggested, but that from their nature and extent, they *might* equally well have been received during a struggle with a tame kitten or a pet canary!"

I was not examined in court on that occasion, so cannot say what value the prosecution attached to my report, but as, shortly afterwards, I was requested by my Departmental Head "to avoid in future adopting a flippant and frivolous tone in my correspondence with other departments, as it was likely to engender friction," I

conclude that my answer was not what was wanted

An anxious counsel for the defence once asked me, in a murder case, after many entreaties to be very careful before I replied "Now, Sir, shall this chap (the deceased) have drawed some breaths before he died?"

I assured him that he might be morally certain that the man respired up to the time of his death, and he noted down my answer with profuse thanks and apparent gratification

He was, however, on the right track, and his question, repeated in vernacular at my request, meant—"Could the murdered man (who had been nearly decapitated) have walked some miles after the receipt of his injuries and made a dying deposition at the nearest thana?"

I have been most severely taken to task by a police prosecutor because I was unable to sufficiently enlighten him as to the degree of contortions a person was likely to be thrown into during strangulation, and when at length I said in desperation that "I had never seen a person strangled," he exclaimed in triumph, "I would like that on the record. The Civil Surgeon says he has never seen a person strangled"

I added that "If I had, I should have done my best to rescue that person," but fear that the policeman had little opinion of me thenceforward. In a somewhat unusual case, in which I had given evidence of finding a ruptured spleen and also marked signs of asphyxiation, for which latter I could not account (the accused, father of the deceased boy, had, it appears, *confessed* to having punched his son in the ribs, because he cried for food when there was none, and then seeing him go white and death-like, got frightened and finished him off by hand pressure on his mouth and nose), an intelligent assessor, who had heard my evidence and the confession, asked me—"How do you know that the boy did not die from fatigue-exhaustion or bitten by a serpent?" It would be easy to recall scores of similar inanities, all arising from a want of special knowledge on the part of the questioner, but the above will probably suffice

Under the existing Law of Evidence, the medical witness's written report "cannot be admitted as evidence until it has been deposed and recorded *de novo*, and at length in the presence of the accused." This done, the magistrate proceeds to ask questions (out of a book) and the prosecution and defence cross-examine, but from an obvious want of special knowledge on the part of the judge, and in the absence of a medical expert to advise counsel what questions should be asked, and what should not, the result is generally unsatisfactory and leads to nothing but prodigious waste of time

In these provinces, and I suppose something similar obtains elsewhere, all courts are provided

with instructions to magistrates in the shape of a Judicial Commissioner's circular, setting forth in great detail, the procedure to be adopted in examining medical witnesses, with no less than 10 examples of "series of questions that may be put" to the witness in cases of poisoning, wounds, hanging, drowning, rape, insanity, etc. It is in fact compiled exactly on the principle of "Madame De Fivaz's French Guide," "With the Baker," "With the Butcher," "With the Boot-maker," etc

The questions of course intended to prevent magistrates running off the rails, are excellent in their way, and might, with great advantage, be in the hands of every medical subordinate, who would thus learn what points to particularly note in his report and matters on which to make himself "safe" before going into court

Too often, however, the heading "questions that may be put" is interpreted by the conscientious magistrate into "Questions that *must* be put," with the result that after completing your deposition in, say, a plain straightforward case of drowning, you are asked "Did you find any aquatic plants in the hands, or mud under the finger nails of the deceased?" or some such rubbish

Again, in the series of 18 questions on rape. The *last* question is, "Do you believe rape has been committed or not? State your reasons?" A good business-like question, but one which if it had come *first*, might have rendered unnecessary most of the other seventeen. I am afraid we must admit that even these excellent questions do not help the matter much, and from what I have written it is, I think, evident that the present method of taking medical evidence might well be improved upon

The procedure I would like to see tried would be for the medical expert (usually the District Medical Officer) to be called to the court as an adviser, not as a witness

He would, as now, send in his written report (if he personally had conducted the enquiry), and on entering court could be asked to read it aloud and formally depose that it was his

I would have no cross-examination, but the magistrate would then briefly summarize the case saying—"The case for the prosecution is so and so," "but the defence is so and so," "from the medical standpoint is there anything inconsistent in either, or have you any further observations to offer than are already down in your report?"

I think judge, prosecution and defence would be much more likely to get full value out of their one available medical expert in this manner, than by the present process of crooked questions and cross answers

Some slight changes would be necessary in the Evidence Act to allow of this procedure being adopted, but not, I think, anything very radical

Even now, a Civil Surgeon is often called, as an expert, to assist the court in understanding and valuing the evidence of one of his subordinates, and if this is possible, how much more so should it be for him to be able to advise the court as to the meaning and value of his own evidence? As an adviser he could do this, as a witness it is his duty to depose and to answer questions, nothing more

THE INDISCRIMINATE USE OF THE *LATHI**

By A. F. STEVENS,

CAPTAIN, I.M.S.,

Offg Civil Surgeon, Shahabad

Now tell us what 'twas all about

And what they killed each other for

ONE cannot work long in this part of the Province of Bengal without noticing the highly important part the *lathi* plays in its medico-legal history, both as regards the extreme frequency of its use, and the severity and dangerous nature of the injuries it often produces

Apart from fatal cases, I note that, during the year commencing April 1st, 1901, there have been treated at the Amiah Dispensary 223 police cases, out of which in 204 cases the injuries were caused by hard blunt instruments, *i.e.* *lathis*, in ten sharp cutting instruments, in six the weapon used was doubtful, and of the remaining three cases, two were rape, and one was poisoning. Of the 204 cases of injury by *lathi*, 24 fractures were caused, 17 of the long bones of the arms, two of the metacarpal bones, and one of a finger, or in all 20 fractures of bones of the upper extremities. The remaining four fractures were thigh, rib, clavicle and nasal bone, one each. In several of the above cases the fractures were compound or comminuted

The large preponderance of fractures of the upper extremities is, of course, due to the fact that the arms are used to ward off the threatened blow from the head, for it is at the head that in this part of the world the blow is generally aimed, and not at the legs, as noticed by Assistant Surgeon R. K. Gupta in his notes. It would be interesting to compare the figures given by us in this connection with those obtained from the Eastern Bengal districts, and also to compare the ratio of fatal cases following on the different styles of wielding the weapon

As regards fatal cases the attention cannot fail to be arrested by the fact that it is often one single blow that is sufficient to cause death, also that the blow is not necessarily delivered with great force, or by a particularly powerful

operator. I have recently had in my jail a boy aged about ten years who was convicted of having caused the death of a man, by giving him a blow on the head with a *lathi*, the blow in this case not fracturing the bones, but separating the sutures of the skull. The *lathi* used in this case was a tapering one, being very thin at one end, by which it was held. It was, it seems swung round rather than deliberately struck with

The *lathi* is not held by the middle, so that both ends can be brought into play, as was the case with our old English quarter-staff, but by one end, the object struck coming into contact with it close to its other end, the strength of the blow gaining enormously by leverage, being multiplied, I should say some six to ten times, though the exact multiplication of the blow is hard to determine, so that, even in the hands of a weakly person, it becomes a most formidable weapon. The *lathi* in these parts is made of male bamboo, it is from six to seven feet long, three to six inches in circumference, and three to six pounds in weight, sometimes it is of bamboo only, sometimes bound with iron rings, or adorned with lashings of brass or iron wire, or it may be furnished at one end with a small spud. Often it is loaded and studded with metal, the better ones are generally kept as heirlooms and oiled, polished, groomed and cared for as jealously and carefully as any highly prized cricket bat. It is seen in the hand of almost every cultivator, whether he is on business or pleasure bent, and whilst he is at work in the fields it lies handy with his superfluous clothing. A petty dispute about some irrigation question, a cow, the price of some article, or other triviality, and the weapon being to hand, the preliminary wordy warfare gives way to the stern arbitrament of arms. A few half-hearted and tentative blows, the rivals striking and retreating in turn, so the desultory fight, if it can so be called, goes on till at last one of the combatants takes the initiative and with a more vigorous and better-aimed blow fells his antagonist, wounded and worsted to the ground, his dangling limb or limp and oblivious form proclaiming him a candidate for the hospital, if not for the dead house, whilst he, the scared victor, hurries off the battlefield to collect his witnesses to prove the *alibi* to save him, poor wretch, from jail or the Andamans.

Why then this tragedy? Why his wrecking of life and home? We can answer this question by another. Why the indiscriminate carrying of weapons in season and out of season? Had not the weapons been to hand, the dispute would have died away in its initial wordy stage, for our gentle cultivator shares with our continental neighbours a reluctance to appeal to nature's weapons, and personal contact is an abhorrence to him. Fists are not as efficient weapons as sticks, our prehistoric forefathers know this

* For the benefit of readers in England, we may say that a *lathi* is a heavy stick something like a very long Irish *shillelagh*.—Ed, I.M.S.

when they tore limbs from trees and fashioned clubs therefrom, but seemingly it requires a higher standard or rather different form of courage to fight with the weapons with which nature has supplied one, and many a man who would hesitate to close with his enemy would not mind standing up against him with a seven-foot pole in his hands.

Hitherto the courts have hesitated for some occult, but no doubt very good, reason to call the *lathi* a deadly weapon, though in the hands of one inexperienced in the use of arms it would probably be more deadly than a revolver. Were the *lathi* considered to be a lethal weapon, the difficulty would be over. General disarmament except in towns seems to present difficulties, otherwise what would be a more efficacious remedy? Why is the *lathi* so generally carried? Ask the villager, he will say, it is to protect him from wild beasts. That they may be a protection in some cases is undoubted, for instance, a case occurred near Bhāgūlpur in 1900, in which a leopard was killed by men with *lathis*. Again hyenas have more than once been killed in Sasseram with the same weapons. But such an argument only applies to the small tract of country in which such animals are found. Again he says, it is to kill snakes with should he meet them by the way. *Lathis* are not the most suitable weapons for snake-slaying. Or again if any man strive against him? If his enemy were disarmed and prevented from carrying these weapons as well as himself, how then would he be worse off? In case he meets *badmashes* or *dacoits* by night. Quite so, but if the carrying of *lathis* were forbidden, the operations of these gentry too would be seriously hampered. The usual procedure of the *dacoit* in these parts, I believe, is that of the guerilla warrior. Pursuing the tactics of a De Wet, he gathers his band for the occasion only at a certain named place, and disperses it as soon as the affair is over, and since the carrying of *lathis* is general, the passing to and fro of such "armed men" provokes no comment. What is to distinguish them from the guileless peasantry similarly armed? If all were forbidden to carry them, how could the wicked men escape detection? A seven-foot pole is not easily hidden under the *dhoti*, and the *lathi* is the favoured weapon of the wicked man of these parts. He wants it, he says, to protect his hearth and home from inroad. By all means let him have it if he keeps it in his house, the law allows him to possess a sword, but it does not allow him to carry one. His last uses are peaceful in the extreme. He wants it to beat his cattle with, and to help him along the ridges of his inundated rice-fields, and for the latter purpose affixes thereto an iron spud. This seems reasonable—but does he want it quite so thick and bound round and loaded with so much brass and iron? I think not.

Nine-tenths of the *lathis* one meets with, are without doubt weapons, ayé and dangerous weapons, made and kept as such, be it for defence or offence. But disarmament, however desirable, though perhaps practicable in towns, would probably be both impossible and impolitic in the country, and so too would any interference with the length, weight, or thickness of the staff. The only remedy therefore that remains, perhaps, would be in the form of special legislation concerning the use of *lathis* for offence, bringing them with the same category as other deadly weapons. A ruling that the *lathi* is an "instrument, which used as a weapon, is likely to cause death," (see Indian Penal Code, sections 144, 148, 324, 397 and 398) would be of great service. One might even go further and add a fifth clause to section 99 in terms somewhat as follows—

"The right of private defence does not extend to the inflicting on the head of a blow with an instrument which, used as a weapon, is likely to cause death, unless the offence which occasions the right be of any of the descriptions enumerated in section 100."

Failing these measures could it not be possible that the rule be made that a blow on the head with a *lathi* should never be punished with the infliction of a fine only?

These are suggested remedies, there are probably others better and more feasible, but I think most will agree that something ought to be done to protect the villager on the one hand from injury or death, on the other, from the consequences of foolish and intemperate acts, that may bring him to disgrace and the jail, and his family to want and suffering. But, it may be argued, it would be absurd to call every instrument through which death has been caused a deadly weapon. That is so. I have known two cases within about a week, in which death was caused by the point of an umbrella perforating the orbit, (*) one an accident, the other done in self-defence. Should the umbrella be branded therefore as a lethal weapon? The question is of course ridiculous. The cases, however, are very different, the umbrella is made for a specific and pacific purpose, it was never intended for a weapon. But is this the case with the *lathi*? Emphatically no. I say, I am sure that wherever a *lathi* is fashioned, the possibility of its use as an "aim" is never absent from the mind of the maker, and all his skill and ingenuity is brought into play to make it the efficient and deadly weapon that it is.

The figures that I have given may seem small and unconvincing, but it must be borne in mind that they are taken from the books of one dispensary only and pertain to a very small

* Compare these two cases with a recent *cause célèbre* in Chota Nagpur, where the death of a Native was caused by a European, a small portion of a fractured stick penetrating the orbit.

tract of country, part of the Sadi subdivision of Shahabad. Were the figures for the Province, or even the whole of Behar, added together, the tale would be very different and the great mischief wrought very apparent.

I have said nothing about professional *lathi* men and bullies, organised rioting, attacks on zemindars and officials, such as plague workers, being more concerned with pointing out the deadliness of the weapon than in complaining of the spirit of lawlessness that is also too common in these parts.

I do not think I have over-stated the case, an inspection of the books of any dispensary or jail in Behar will show you how great the evil is, and how urgent the need of remedy.

INJURIES CAUSED BY LATHI BLOWS

By R. K. GUPTA, LMS, MRAS (LOND),

Asst. Surgeon, Arrah

As regards medico-legal cases "injuries by *lathies*" are very common, and are those with which medical officers are most often concerned.

1. Injuries on head may present the appearance of lacerated and contused wounds, but in some cases they are like incised ones, due probably to the natural tense state of the scalp in particular parts of the skull, such as the parietal and temporal eminences.

Contused wounds and severe contusions often present such characters that it is not easy to say whether the wound resulted from the use of a weapon, or a blow from the fist, or from a fall. Contused and punctured wounds of the scalp appear more dangerous on account of the inflammation they set up in the loose areolar tissue, intervening between the tendon of the occipito-frontalis and the periosteum, for want of free exit for the discharges. This complication is, however, not a frequent accident. I have come across two such cases, one at Jubbulpore, and the other at Behar. Injuries on the head are not necessarily more important than injuries on other parts of the body by *lathies*, but for the injuries to the brains and membranes and also from abnormal formation of the skull. In some cases the skull is abnormally thin. In Chittagong I held a *post-mortem* examination on a person who died of fractured skull (left parietal caused by a blow from a thin branch of a tree not thicker than the little finger) in the way of chastisement. He died after nine hours. His skull was unusually thin. In another case the man received a blow on the right temporal region and died after a couple of hours. The *post-mortem* examination disclosed thinness of bone. Injuries to the head by *lathies* causing fracture of skull are difficult to detect if examined immediately after the infliction of blow, unless the wounds are extensive or until

symptoms of pressure on the brain arise to guide one. I held a *post-mortem* examination on a female at Madhubani who died two days after she had a fall on the back of the head. The *post-mortem* examination disclosed a fracture of the middle fossa of the skull with a contusion on the occipital region.

The discovery after death of the severe injury to the skull and brain must not lead one to suppose that death was immediate. Cases are known where slight contusion on the head was attended with fatal result, and extensive fracture, on the other hand, accompanied by depression of bone, followed by perfect recovery. A boy of twelve years received a severe blow on the head from a piece of wood while working in Titagurh Jute Mill in 24-Parganas which fractured his left parietal and part of his frontal bone. The boy completely recovered in six weeks' time. While I held charge of Cox's Bazar Dispensary in Chittagong a man, *Magh* by race, was brought to me with an incised wound on the head, cutting a portion of right parietal bone in a slanting way. The man was unconscious. On examination I found a large clot of blood between the dura mater and the skull which was cut. I removed the portion of the skull which was cut, and cleaned the dura mater of the blood clot. The man regained consciousness after six hours, and he was cured in three weeks' time. Of 73 persons on whose body *post-mortem* examination was held in the Arrah Dispensary, 14 died of fractured skull by blows from *lathies*, a sufficient number to show that *lathies* are as important and dangerous weapons as revolvers, swords, &c, for the purpose of committing murder.

Death from extravasation of blood in the brain without fracture of skull, as a result of *lathi* blows, is not, however, very uncommon. There are three cases on record in Arrah Dispensary, all in females, aged over 60 years. The chief source of effusion was probably from the meningeal artery, and in two other cases death resulted from laceration of brain substance by blows on head with a *lathi*. Injuries to the thorax by *lathies* is not a rare occurrence, simple fracture of the ribs being frequently met with.

There is one case on record at Arrah Dispensary where 5th, 6th, 7th and 8th ribs were fractured, and the end of a fractured rib perforated the apex of the heart causing death. Death from injury to the spinal column as a result of *lathi* blow or kicks is a rare occurrence. Of the two cases on record in Arrah Dispensary, in one death occurred from fracture of 5th and 6th cervical vertebrae, and in the other from dislocation of 3rd cervical vertebrae. The following case may therefore be interesting to record. While I was at Behar, an old man aged about 50, was brought to the hospital with the history of blows from *lathies* on the chest wall, and

spitting of blood. The ribs were not fractured, and the blood was probably from laceration of lung tissue, though this accident is probably rare on account of elastic condition of the lung tissue.

As regards internal organs, rupture of the spleen, especially if enlarged, is not unfrequently caused by blows with blunt instruments, rupture of the liver, however, probably owing to its sheltered position under the ribs, seems to be extremely rare, rupture of the stomach, especially when empty, seems even more rare, but there is one case on record in Airah Dispensary where the stomach was ruptured at the cardiac end to an extent of about 4 inches on account of a blow from a *lathi* in the epigastric region. The man had also fracture of the parietal and frontal bones. Notwithstanding these extensive injuries the man survived two days, during which time it was impossible to feed him by the mouth. No food-stuff was found loose in the peritoneal cavity. Rupture of the intestines due to blows from *lathi* is probably a rare accident.

Injuries to the *extremities* by this weapon are very common. Those of the upper extremities are frequently met with. This is due to the peoples' endeavour to protect the head from blows by lifting the arm over the head or in trying to catch the weapon of the assailant. Fracture of the lower extremities by *lathi* blows are not very frequently met with in Behar as noticed by Captain A. F. Stevens, I.M.S. (of the 24 fractures by *lathi* only one was in the thigh). This is more frequent in Lower Bengal, and results when blows are dealt aiming at the lower extremities, so as to make the man fall down or desist from attack.

NOTES OF MEDICO LEGAL CASES

PAUL D. SUTHERLAND M.B.,

MAJOR, I.M.S.,

Civil Surgeon, Saugor C.P.

THE medical aspects of a criminal case are always of interest to the professional mind, and in India the medical evidence is of great interest to the judicial mind, for it often happens that the evidence of the medical expert in a criminal case is the only honest evidence as to facts, the complainant having exaggerated his injuries, and had his story bolstered up with cunningly-devised testimony as to detail by the police, which the accused has tried to save himself by pleading an *alibi*, and to damn his accuser's reputation at the same time, by alleging that he has a spite against him, and is currently reported to be guilty of various crimes. Therefore it is of service to note even the few points which have occurred to one in practice in the *mofussil*.

1 The results of decomposition in the tropics—A body was brought in from an outlying village for medico-legal examination, and, on the way, the corpse-bearers passed the police-station of the circle in which the alleged murder had occurred. By the time that the *thanadar* saw the body, decomposition was considerably advanced—for it was the height of the hot weather, and prolapse of the rectum and slightly of the vagina had taken place, as the result of intra-abdominal gaseous pressure.

The *thanadar* was struck by these appearances, which were new to him, and being at a loss to account for what had been left undescribed, because then non-existent, in the first report of the case, he set about concocting a story of the causation of the prolapse.

When the case came up for trial several witnesses—"respectable" men every one of them—deposed to having seen the accused thrust a long stick up the woman's rectum. They said that he had stirred the stick well inside her body, and then withdrawn it, and that they had particularly noted that when the stick was withdrawn the bowel was brought down. Unfortunately the appearances observed at the autopsy gave no semblance of probability to this story, so the judge refused to believe it.

2 The remote effects of rupture of the spleen—A man was assaulted, and died of his injuries. It was alleged that he had survived for several hours—at least six hours—and that just before he died, he had held a long conversation with the village headman, to whom he had disclosed minute details as to the appearance of his assailant, &c. At the autopsy the abdominal cavity was found to contain a very large quantity of blood, which had escaped from deep rents in the substance of the spleen, which was much enlarged and friable. The story of the man's having survived so long, and having retained his faculties to the last, was thus negatived, although supported by various "credible witnesses."

3 Alleged rape—A lad aged about 18 was seen masturbating a little girl of eight years of age, and to save her daughter's reputation the mother of the girl accused the lad of having committed rape. The girl was brought in for medical examination, lying in an apparently semi-conscious state, on a *charpoy*, from which she was tenderly lifted, and brought before me. She stated that she was quite unable to walk having been severely injured in the genitals, and she was voluble in her asseveration as to the absolute completeness of penetration, &c, though curiously enough she could not say what part of his body the ravisher had employed. This of itself looked suspicious, as a village girl of low caste, even of her age, must have seen and heard named the male organ dozens of times. When I came to examine the genitals, I found that there was not the slightest trace of any injury external or

internal, from which the blood with which the inside of her thighs was smeared could have escaped. The genital canal was, as one might expect, of very small calibre, and almost undilatable. When the child saw that I did not seem to credit her story, she got up and walked off as lively as possible. The accused, who had a very large penis, at first tried to save himself by pleading impotence, but was convicted of indecent conduct, which he finally admitted. Evidently the mother had been the tutor of her child in this case, and had forgotten that a child would not pay attention to the conventionalities in relating the story of the rape, and thus had taught the girl to pretend modest ignorance of the differences between the sexes.

4 The signs of death by drowning — A woman, whose husband was in prison, had formed a *liaison* with the *patwari* of her village, and had become pregnant. Her lover sent for a notorious abortionist, who lived some 35 miles away, and when this old hag arrived, she proceeded to empty the uterus of its contents with the result that *post-partum* hæmorrhage set in, according to the story for the defence, and the woman died soon after the birth of the child. Alarmed by this unexpected result of their labours, as they alleged, the old hag and the lover trussed up the woman's body to facilitate its transport and threw it into a disused well, which was in the jungle some distance from the village. The body was found next day, however, and brought in for medico-legal examination. I found the signs of recent delivery, but in the stomach I found a little water, and when the chest was opened the lungs presented at once, were "balloon lungs" in fact. Accordingly I give it as my opinion that the woman had been alive when she was thrown into the well, and that she had died from drowning. Assuming this to be the case, the reason for trussing her up with strong cords was apparent, but the judge who tried the cases preferred to believe that she had died from hæmorrhage, and the lover and the abortionist escaped with comparatively light sentences.

5. The signs of passive pæderasty — Into the description of these Tardieu and others have gone at considerable length, with the result that to many minds the "infundibulum" and the "triangular sodomic wound" are a *sine qua non* of passive pæderasty. Undoubtedly Tardieu and his school did see what they describe, and where these signs are present the evidence is complete, but where they are absent the innocence of the accused should not be presumed in all cases, witness the following case — A Brahmin, aged about 40, sought treatment for what he said was a boil on the perinæum. On examining the "boil," I found it to be a typical Hunterian chancre, situated one inch in front of the anus, and on being questioned, the patient admitted that he might have contracted it from

one of his friends. He volunteered the statement that he had been a pathic for at least twenty years, so I examined him for the classical signs of his aberration, and found none of these. The genitals were well formed, there was no deformation of the anal region, no infundibulum or loss of rugæ and the tone of the sphincter was normal.

6 The signs of virginity — From the dawn of civilisation these have been believed in, although well authenticated cases are on record in which the birth of the child was hindered by a rigid hymen. Every medical man knows, too, that absence of the hymen is no proof of loss of chastity, and the following case may contribute to impress upon my readers' memories the fact, that the chastity of a woman cannot be predicated with certainty from the fact that her hymen is present and apparently intact. Many years ago, in Martineau's service in the Broca (then Lourcine) Hospital in Paris, I saw a girl who had come to the out-patient department for treatment of what was to all seeming an insignificant leucorrhœa. There was no obvious urethritis, nor were Skene's tubules affected, a point to which Martineau used to pay particular attention, and there was present a hymen whose orifice was barely two millimetres in diameter. But this girl was suffering from gonorrhœa, and admitted that she had infected several of her customers, she being a clandestine prostitute of the pulchus of the Sorbonne. She had been on the town for over a year, and had entertained as many as five men in a single afternoon on a *fête* day. Her hymen was elastic, and admitted of the passage of a large rectal bougie, returning to its obturator-like condition, when this was withdrawn.

7 The signs of age — It sometimes happens that the medical expert is entertained, if not edified, by the questions asked him by the learned *vakil* for the prosecution or defence as the case may be, and when these questions serve to fix a point in the expert's mind, they are of some service. A Brahmin girl had formed a connection with a low-caste postman. She admitted that she had made the first advances, having gone to the postman's house, in his wife's absence, and announced to him her firm intention of not leaving his house until he had proved himself to be a man. But her father alleged that she had been enticed away by the postman, she being under 16 years of age. In support of this assertion he produced what purported to be the girl's horoscope, in which the date of her birth was fixed at a time some 14 years before, and he called me as a witness. I gave it as my opinion based on a careful examination of the girl's teeth, mamma, &c, that she was between 18 and 20 years of age, and as this evidence did not suit the father's *vakil* at all, he proceeded to try to shake it. First he asked me whether I could on oath certify that it was impossible for a girl of

14, to become like a woman of 18, granted that for a fortnight she had indulged in excessive sexual intercourse with a strong young man. When he received what was, from his point of view, an unsatisfactory reply to this question, he applied himself for a few minutes to the study of a well-known manual of medical jurisprudence, and then, with an air of triumph, asked whether I had examined the girl's bones. He had been reading the passages relating to the determination of the age of—a skeleton!

PERFORATION OF THE STOMACH AND DUODENUM FROM DISEASE A CAUSE OF SUSPICIOUS DEATH

By J. T. CALVERT, M.B. (LOND.), D.P.H. (CAMB.),

MAJOR, I.M.S.,

Civil Surgeon, and Superintendent, Medical School, Cuttack

AMONGST the number of causes of sudden illness and death, occurring in apparently fairly healthy individuals—which in India is tantamount to a suspicious death—perforating ulceration of the stomach and duodenum would not appear to have received the amount of attention which its frequency would seem to warrant.

The following case recently came under my observation in this district—

An under-trial prisoner, Hindu male, *æt* 50 years, admitted to Jail in indifferent health in November 1901, went one morning to court. Prior to his departure he ate his breakfast and made no complaint. Whilst waiting at court, he was said to have been given some sweetmeats. One party alleged that he received them from the police, the other that they were given to him by his friends. He was afterwards taken suddenly ill with colic, etc., and was brought back to jail in the evening, in a cab, in a state of collapse, and died about quarter of an hour after his re-admission. In view of the sudden death and allegation made, a judicial enquiry was held next day. On *post-mortem* examination death was found to have resulted from perforation of an old ulcer, situated on the anterior surface of the lower curvature of the stomach at its pyloric extremity. The abdominal cavity contained fluid and partially digested rice, the peritoneum was only slightly inflamed, there were no adhesions. The other organs were healthy. No suspicion attached to the sweetmeat which had been obtained from the local vendor at the court. The occurrence of this case led me to look up the recent *post-mortem* records of the jail, General Hospital, and also the notes of the medico-legal cases. From these I extract the following—

A Hindu male, *æt* 40 years, living in a mofussil village, after complaining of colic, died suddenly. The death being suspicious, the body was sent in by the police for *post-mortem* examination.

At the time of the necropsy the body was decomposed. A perforation of an ulcer at the pyloric end of the stomach—size and surface not stated was found, with indication of general peritonitis. The other organs were healthy.

The following appears in the jail notes—A Hindu male prisoner, *æt* about 50 years, died somewhat suddenly in July 1901. On *post-mortem* examination general peritonitis was discovered. In the duodenum were two ulcers each equal to a rupee in size, one of which had perforated. There were numerous adhesions.

The *post-mortem* records of the General Hospital having been carefully noted by Asst-Surgeon S. C. De, Lecturer on Pathology, are very interesting. They show amongst death due to other causes, that ulcers of the stomach are by no means infrequent. The following extracted from the records for 1901 is a case of death due to perforating ulcer of the stomach.

A Hindu male, *æt* 27 years, admitted to hospital for chronic dysentery and dilatation of the stomach, died somewhat unexpectedly of general peritonitis. *Post-mortem* examination showed two ulcers at the pyloric end of the stomach, one of which had perforated with the resulting formation of a large localized abscess. This had subsequently given way leading to death from general septic peritonitis. The colon was healthy.

Remarks—The symptoms which follow perforation of the stomach or duodenum, with escape of contents into the general cavity of the peritoneum, resemble those due to irritant poisoning, for which these cases may be mistaken as in the first two cases noted. I have not been able to consult that storehouse of information Cheever's "Indian Medical Jurisprudence," but in the same author's "Diseases of India" the following passage occurs when speaking of simple perforating ulcer of the stomach: "This disease must be rare in India. I saw it but once, and I know of only three other recorded cases." A statement which would appear to require considerable modification in view of these notes.

MEDICO LEGAL NOTES FROM ALIPORE

By F. J. DALBY,

Assistant to the Civil Surgeon, 24 Parganas

The subjoined medico-legal notes on 1,333 cases brought to the Alipore morgue during the years 1891-1900 from the suburbs of Calcutta, and the sadi sub-division of the District of the 24-Parganas, with a population of 1,029,778 (males 551,568, females 478,212) will, it is hoped, be of interest.

(a) Of the 1,333 cases dealt with, the Hindu population contributed 913, the Mahomedan 301, and other castes 119, or 1.29 of population.

Natural Causes—Hindus, 227, Mahomedans, 43, other castes, 46, accounted for 312 per mille of population

Cases under this heading are sent for examination when any suspicion exists as to the cause of death, or it may be that they have been found dead without any history as to the cause

Shock and Hæmorrhage—Total 1269, or 261 of population

Hindus	160
Mahomedans	87
Other castes	22

(1) Of the "Hindus" 96 were homicidal, 55 accidental, 7 suicidal and 2 unknown

(2) Of the "Mahomedans" 60 were homicidal, 26 accidental and 1 suicidal

(3) Other castes (22), 7 were homicidal, 10 accidental and 1 unknown

Suicidal (Hanging)—Total 301, or 292 per mille of population

Hindus	210
Mahomedans	86
Other castes	5

Drowning—Total 181, or 175 per mille of population

Hindus	119 males, 73 females	46
Mahomedans	45 " 21 "	24
Other castes	17 " 8 "	9

Of the Hindus (119 cases), 103 were accidental, 12 suicidal, 1 homicidal and 3 unknown

Of the Mahomedans, 41 were accidental, 1 homicidal, 2 unknown and 1 suicidal

"Other castes" gave 14 accidental, 2 suicidal and 1 homicidal

Drowning apparently is not a favorite method of committing suicide

Poisoning—Total 174, or 169 per mille of population

Opium—As may be imagined opium was accountable for the greater number 89

Hindus	75 males 42, females	33
Mahomedans	9 " 7 "	2
Other castes	5 " 5 "	nil

Taken collectively, there were 79 suicidal, 2 homicidal (Hindus) and 8 accidental

Arsenic—Total 12, or 0116 per mille of population

Hindus	9 males 6, females	3
Mahomedans	3 " 3 "	nil

There were suicidal 6, homicidal 3, accidental nil

Snake-bite—Total 20, all Hindus In view of the fact that a considerable sum of money is paid every year by magistrates in the shape of rewards for venomous snakes killed and brought to the cutchery, these figures are scarcely satisfactory

Still born—16 or 0156 per mille of population Only one recognised as a Mahomedan, the remainder being classed under other castes

Too decomposed—Total 13, or 0126 per mille of population

It has been remarked that though the progress of decomposition is very rapid in this country, it is a pity that some means are not adopted to

retard it The same means exist now as 50 years ago, the common country cart covered or uncovered with matting or for shorter distances an ordinary charpoy are the only means of conveyance Then on arrival at the morgue frequent delays occur in the furnishing of the usual order to hold a *post-mortem* It is urgently necessary in the interests of justice that means should be taken by the police to prevent or delay decomposition as far as is possible

Suffocation—Total 11, or 0106 per mille of population, 7 of these were accidental, 3 suicidal and only 1 homicidal

A brief outline of the history of the one case returned as 'homicide' may be interesting

"Body unidentified, found lying in water in a ditch with some marks on his face and head, and a cloth tied on his neck

"At the *post mortem* there was (1) a circular wound at the outer angle of the right eye $\frac{3}{4}$ inch in diameter (2) a longitudinal wound horizontally across the right temporal region 1 inch above the right ear, (3) incised looking wound in front of left ear 1 inch long $\frac{1}{2}$ inch broad, (4) incised looking wound behind the left ear 1 inch long $\frac{1}{2}$ inch broad vertically directed

(5) Incised looking wound 1 inch long, $\frac{1}{2}$ inch broad and on top of the head transverse The right temporal bone was found fractured and a circular piece $1\frac{1}{2}$ inch in diameter was depressed The right parietal bone was found fractured, also the base of the skull Internally the larynx, trachea and bronchi, large and small were found blocked with roughly powdered charcoal, and the same material was found in the mouth pharynx and cesophagus and the stomach

"The body was highly decomposed, and a definite opinion could not be given, but it was suggested that the deceased was rendered unconscious by repeated blows on the head and then suffocated by his nostrils being held and his mouth filled with charcoal"

Strangulation—Total 11, or 0106 per mille of population, 10 of these were homicidal and 1 suicidal Of the homicidal cases one is interesting from it being probably the result of *thagi*

The deceased, a Hindoo male, aged about 60 years, retired to sleep about 10 P.M. (February 1892) in his room In the morning he was found dead lying on his stomach with a cloth tied around his neck with blood oozing from his mouth and nose There was a hole in the wall of his room

The chin was swollen and bruised, and on section some ecchymosed blood was found in the soft structures surrounding Over the skin of the front and upper part of the chest and lower part of the neck and throat, chest, arms, shoulders and abdomen were found uniform livid marks of discolouration probably due to intense engorgement of the superficial vessels underneath the skin (capillary congestion) A tight ligature of cloth (*dhoti*) was found fixed round the throat and neck. The noose was double and tied by an ordinary knot, the latter was on the right side of the neck pressing against the angle of the lower jaw, beyond the noose the *dhoti* was about 4 yards long, and was here and there blood-stained

On removal of the noose the circular ligature mark was broad, depressed and livid with numerous excoriations, except over the nape of the neck, and scratch like wounds covered by coagulated blood each from $\frac{1}{2}$ to $\frac{3}{4}$ long On section through the soft structures of the neck, the sterno-mastoid and the parts adjacent were found blackened from parietal laceration and extravasated blood The subcutaneous tissues under the

Medico-legal Results at the Alipore Morgue, 24-Parganas, for 10 years, 1891-1900

Hindus 698,958

Mahommedans, 322,647

Other Castes, 8,173

1,029,775

Population, 1,029,778

Males, 551,568

Females, 478,210

CAUSE OF DEATH	HINDUS								MAHOMMEDANS								OTHER CASTES								TOTAL	Per Mille of Population				
	Male				Female				Male				Female				Male				Female									
	1 to 30 years		31 to 50		51 & up		Total	1 to 30 years		31 to 50		51 & up		Total	1 to 30 years		31 to 50		51 & up		Total	1 to 30 years		31 to 50			51 & up		Total	
	1 to 30 years	31 to 50	51 & up	Total	1 to 30 years	31 to 50	51 & up	Total	1 to 30 years	31 to 50	51 & up	Total	1 to 30 years	31 to 50	51 & up	Total	1 to 30 years	31 to 50	51 & up	Total	1 to 30 years	31 to 50	51 & up	Total			1 to 30 years	31 to 50	51 & up	Total
Hanging	34	31	13	78	105	23	4	132	16	11	7	34	44	6	2	52	1	1	2	2	1	3	301	292						
Shock and Hemorrhage	47	52	18	117	20	14	9	43	15	3	13	53	13	12	4	29	9	5	1	15	5	2	7	269	261					
Drowning	39	24	10	73	38	4	4	46	11	4	6	21	19	2	3	24	7	1	8	6	2	1	9	181	175					
Poisoning, Opium	31	9	2	42	27	5	1	33	6	1		7	1	1	2	2	2	1	5				49	486						
„ Strychnine	2			2	2			2					1		1									5	0048					
„ Arsenic	4	2		6	2	1	1	4	1	1		2												12	0116					
„ Mercury	1			1	1			1	1			1	1		1									4	0038					
„ Aconite					1			1																1	0009					
„ Alcohol		1		1					1			1	2		2		1		1			1	1	6	0058					
„ Hydrocyanic Acid	1	1		2	1			1								1			1					4	0038					
„ Carbolic Acid									1			1												1	0009					
„ Carbonic Acid									1			1												1	0009					
„ Dhatura	1	1		2																				1	0009					
„ Cyanide Potash					1			1																2	0018					
„ Santonine																								1	0009					
„ Snake Bite	10	2	1	13	5	1	1	7											1			1		1	0009					
„ Septic	6	3	1	10	5	5		10		2	1	3	3	1	4									20	018					
„ Hemorrhage	2	2	1	5		1	2	3	1			1	1		1									27	026					
Shock	2		1	3		2	2	4				1			1									10	009					
Burns	1			1	2	1	3	1				1					1		1					8	0076					
Suffocation	5	3	1	9		1	1									1		1						6	0058					
Strangulation	1	1	2	4		4	4	1				1	1		2				1		1			11	0106					
Hydrophobia	1	1		2				1				1												11	0106					
Ruptured Bladder									1			1						1	1					4	0038					
„ Uterus						1		1					1		1									1	0009					
„ Intestines		1		1																				1	0009					
„ Spleen	3			3		1		1		1		1												1	0009					
Meningitis Traumatic					1			1								1		1						6	0058					
Abortion					1			1																1	0009					
Still Born	3	2	2	7	1	2	3																	1	0009					
Too decomposed	3	2	2	7	1	2	3		1		1													16	0156					
Tetanus Traumatic									1		1				2		2							13	0126					
Fractured Spine	1			1								1		1										1	0009					
Natural Causes	66	88	28	182	22	12	11	45	11	12	8	31	5	4	3	12	17	5	1	23	18	3	2	23	1	0009				
TOTAL	261	224	80	565	235	78	35	348	68	63	35	166	91	28	14	133	40	17	5	4	60	32	6	6	44	1,333	129			

Medico-legal Results at the Alipore Morgue, 24-Parganas, for 10 years 1891-1900

<i>Hindus</i> , 698,958 <i>Mahommedans</i> , 322,647 <i>Other Castes</i> , 8,173	$\left. \vphantom{\begin{array}{l} \text{Hindus, 698,958} \\ \text{Mahommedans, 322,647} \\ \text{Other Castes, 8,173} \end{array}} \right\} 1,029,778$	<i>Population</i> , 1,029,778	$\text{Approx} \left\{ \begin{array}{l} \text{Males, 551,568} \\ \text{Females, 478,210} \end{array} \right.$
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CAUSE OF DEATH	DISTRIBUTION BY MONTHS														Per Mille of population
	January	February	March	April	May	June	July	August.	September	October	November	December	TOTAL		
Hanging	9	21	27	23	32	44	34	24	27	22	18	20	301	292	
Shock and Haemorrhage	12	16	15	21	31	32	27	36	22	20	22	17	269	261	
Drowning	7	16	10	16	21	21	15	17	22	19	11	6	181	175	
Poisoning, Opium	3	7	6	9	11	11	8	3	4	17	5	5	89	98	
„ Strychnine	1						2	2					5	0048	
„ Arsenic	2	1	3		2					3		1	12	0116	
„ Mercury		1	1				1					1	4	0038	
„ Aconite										1			1	0009	
„ Alcohol	2						2		1		1		6	0058	
„ Hydrocyanic Acid	1				1	1						1	4	0038	
„ Carbolic Acid									1				1	0009	
„ Carbonic Acid			1										1	0009	
„ Dhatura						1						1	2	0018	
„ Cyanide Potash							1						1	0009	
„ Santonine	1												1	0009	
„ Snake Bite	1		1	1	1	2	4	1	4	4		1	20	018	
„ Septic	2	1	2	5	7		3		1	3	1	2	27	026	
„ Hemorrhage		1	1		3	2				1		2	10	009	
Shock	1		1	3	2			1					8	0076	
Burns			1	1	2					1		1	6	0058	
Suffocation	1		1		4	2		1	1		1		11	0106	
Strangulation		4	1		1	1	2				1	1	11	0106	
Hydrophobia			1		2		1						4	0038	
Ruptured Bladder			1										1	0009	
„ Uterus								1					1	0009	
„ Intestines						1							1	0009	
„ Spleen	1		2		1				1	1			6	0058	
Meningitis Traumatic		1											1	0009	
Abortion										1			1	0009	
Still Born	2	1	2	1	1	3	1	1		2	1	1	16	0156	
Too decomposed	3			2	2	3				2			13	0126	
Tetanus Traumatic				1									1	0009	
Fractured Spine								1					1	0009	
Natural Causes	25	31	23	24	25	24	22	20	29	28	26	39	316	312	
TOTAL	74	101	99	107	147	148	125	107	113	125	88	99	1,333	129	

THE DIFFERENTIATION BETWEEN UNMANIPULATED CRUDE OPIUM AND EXCISE OPIUM

By G. I. BIRDWOOD, M.A., M.D., D.P.H.

CAPTAIN, I.M.S.

A QUESTION of medico legal interest occasionally occurs in Civil Surgeons' work, when a sample of opium is submitted by the police, or Magistrate for favour of an opinion as to whether it is crude opium or Government excise opium. This opinion is asked for as it is illegal to sell crude opium. Text-books on medical jurisprudence seem to give no information on the point, and as it is a question on which Civil Surgeons might be called to give evidence, I detail below a few points by which a differentiation may be made. First, it is necessary to say that crude opium may be manipulated or unmanipulated. It is the latter variety which is generally met with. Manipulation for illicit purposes is occasionally done to make crude opium resemble excise opium, and when this is the case, it is almost impossible by naked eye appearance to distinguish them. In these doubtful cases, when the sample resembles excise opium, an expert opinion is necessary, and the sample should be sent to the Superintendent of the Opium Factory at Ghazipur or Patna, where chemical and microscopical tests can be made which very clearly show the difference.

Unmanipulated crude opium is, however, the variety most frequently sent up for opinion, it differs from excise opium in the following points—

(1) Excise opium has a darker colour than crude opium from exposure to the sun in the process of manufacture.

(2) Excise opium has a slightly burnt smell which is lacking in crude opium.

(3) Excise opium, when broken across presents at the fractured surfaces a somewhat shiny appearance, and the surfaces seem to adhere by fine threads. Unmanipulated crude opium has on fracture a dull wax-like appearance, and no threads seem to pass between the surfaces.

(4) Excise opium has externally a more shiny appearance than unmanipulated crude opium, owing to the mixture of slight quantities of poppy oil with the former.

The smallest manipulation may make crude opium resemble excise opium, and when this has taken place it is impossible to swear to it, and the specimen should be sent, as stated above, for an expert opinion. But the majority of cases which are sent up to Civil Surgeons for opinion are unmanipulated crude opium, and the above points should be found sufficient guides to positive identification, and they are given with the hope that they may be useful to others.

Notes on Medico-legal Topics

DECOMPOSITION

ONLY those who have had to perform *post-mortem* examinations in a climate like that of most parts of India in the hot weather are able to realise how repulsive this important duty may be, and it is greatly to the credit of the medical officers of Government in this country that decomposition is so seldom put in as a plea for the non-completion of an autopsy. When Robert Harvey annotated the medico-legal returns of the Bengal Presidency in 1876 he reported that six per cent of the whole number of cases were so far advanced in decomposition that the cause of death could not be ascertained. We have not been able to find out to what extent advanced decomposition has interfered with the finding of the cause of death in the *post-mortem* records of recent years, but we note that in over 1,300 cases examined at the Alipore morgue as reported by Military Assistant-Surgeon F. J. Daley "too decomposed" is recorded in only 13 cases or less than one per cent. The proportion of cases in this advanced state and the extent of the decomposition depends largely upon the distance the body has to be brought for examination, and upon the care taken by the police to cover up the body and hasten its removal, and there can be little doubt that if the rural police realised the importance of bringing in bodies without delay, much unpleasantness would be saved to the examining medical officer, and the ends of justice would also often be furthered. We have frequently heard complaints from medical officers as to unnecessary delay in bringing in the bodies, delay in deciding that it must be brought in, delay on the roadside, and the delay inevitable when a body has to be carried on a country cart at the snail's pace of two miles an hour, which the Bengal bullock considers is the utmost that he will be forced to do.

Here we think Local Governments could do much to help both the medical officer and justice, orders should be given to the police officers in sub-divisions and thanas to keep a supply of charcoal, and it should be freely used to surround the body—which should also be wrapped

up in clean cloths or in bamboo matting* We need not specify the details, but it should be a point of honour with the police that the body should be brought to the nearest examining medical officer with as little delay as possible. The date and hour of receiving the body should be noted on the command certificate and the hour of receipt at the dead-house also noted, and it should be the duty of the Civil Surgeon or other examining officer to report all unnecessary delay on the part of the police to the local Magistrate. A few exemplary punishments for delay would soon, we believe, do much good, and the Magistrate and District Superintendent of Police could in all cases do much to further this desirable end. Now though we protest strongly against the dilatory and leisurely way in which bodies are often conveyed to the examining medical officer, and while we are well aware how rapidly decomposition sets in in hot climates, and especially perhaps in a hot damp climate like that of Bengal, we do not for a moment allow that a state of decomposition is any valid excuse on the part of a medical officer for the non-performance of a complete *post-mortem* examination. This is a matter upon which we know Civil Surgeons are agreed, and they seldom or never allow the very distinct unpleasantness of the task to interfere with its performance, as Kenneth McLeod wrote, over 30 years ago, "no such excuse is a valid one, and the careless or superficial or hurried examination of human remains in whatever state preserved is a palpable dereliction of duty, the requirements of the law should supersede all sense of personal inconvenience and discomfort."

It is true that decomposition may be so far advanced that it is impossible to throw any light upon the cause of death, but it is only *after* an examination that this can be said, it cannot be assumed beforehand. Numerous cases are on record where "only putrid masses of skin and flesh, swarming with maggots" remained, yet examination was able easily to detect the cause of death, from fracture of bones, &c. In fact we must agree with Robert Harvey when he wrote, "page after page might be filled with examples when the most advanced decomposition failed to hide the cause of death."

Therefore when medical officers take this high view of their duties it is all the more obligatory for the executive authorities to see that the bodies are sent for examination as quickly as possible, and in as well preserved a state as is possible, and no reasonable expense should be spared to attain this end.

METHODS OF CRIMINAL ABORTION IN INDIA

THE law with regard to criminal abortion in India is laid down in sections 312 to 316 of the Indian Penal Code, and by them to voluntarily cause or attempt to cause miscarriage, except in good faith for the purpose of saving the life of the woman, is an offence. Proof of pregnancy is required to cause a conviction for causing miscarriage, but not for an attempt. The question of the consent of the woman also arises in Indian law, thereby differing from the law of England as laid down in sections 58 and 59 of 24 and 25 Vict, c 100, as amended by 27 and 28 Vict, c 47.

There can be little doubt that criminal abortion is pretty commonly practised among native women in India, statistics on this point are impossible to obtain, as usually it is only the fatal cases that come to the notice of the police. As Major C H Bedford, M D, I M S, has pointed out (*Trans, Edinburgh Obstetrical Society, Vol XXI, p 205*), cases which recover are not recognised, and the pyrexia is attributed to malaria, or if the woman dies and a complaint be not directly lodged, the body is burnt or thrown into the river. It is generally found that it is the Hindu widows, debaired by stern custom from remariage, who are most often driven to this means of concealing their shame.

The most common method used is the introduction of some irritant chemical substance, or the twig of some irritant plant, as plumbago rosea (*chitra*), nerium odorum (oleander), cecivera thevetia (yellow oleander), or euphorium tirucalli (milk bush). The twigs of these plants are often smeared with assafoetida, opium, arsenic, crude carbonate of soda, black pepper, mercury, croton, jequinity (*ratti*), Calotropis gigantia (*madar*), yellow arsenic or quicklime. In other causes some arsenious acid is deposited on the os, and by its caustic action severe local reaction follows, but the abortion is uncertain. Another common vegetable abortifacient is marking nut (*semicarpus anacardium*), which is also used for marking clothes by *dhobis*. The juice of the bruised

* Nearly fifty years ago Norman Chevers drew up some rules for this purpose, but apparently they were never carried into effect, see his Jurisprudence (p 43, 3rd Ed.)

nuts is highly irritant, producing a red vesicular rash, and when used for marking clothes, the marks should be damped with a solution of lime to neutralise this irritant property. This drug is also of medico-legal importance in another way, as when rubbed on the skin it produces the appearance of bruising (see a case *I M G*, January 1900, p 8, reported by Major J T Walsh, I M S), which in some cases may go so far as ulceration. Its use in medicine has recently been described in these columns by Dr Hem Chander Sen. *Calotropis gigantea* or *madar* is less often used, but has been given either by the mouth or as a local application, yellow oleander is more commonly used in Bengal. All sorts of purgatives are also used, and in many cases their action is certainly increased by the habit of vigorously massaging the abdomen. The cause of death in such cases is generally septicæmia or peritonitis, or more rarely the direct poisonous action of the drug. In some cases even death has occurred without the abortion having come off. The signs of mechanical injury to the reproductive organs vary, but usually damage to the uterine walls can be detected, and perforation is not uncommon.

It may be concluded that most of the drugs mentioned above produce their effect more on account of the local irritation they produce than from any special power of stimulating uterine activity.

ADIPOCERE IN INDIA

SOME of our readers may remember that Dr S Coull Mackenzie, when Police Surgeon, Calcutta, published (*I M G*, 1889, p 42) a series of eight cases of saponification, which he had met with during nine years' medico-legal work in Calcutta. The first case (August 1880) was in 'an advanced state of saponification,' and was found in a tank, having lain there apparently "for several days." The second case was the body of a syce, exhumed from a damp Mahomedan burial-ground four days and four hours after interment, it was also found to be in "an advanced state of saponification" (July 1883), the third case was a Chinawoman, whose body was disinterred on 2nd September, 76 hours after burial. It was also in an advanced state of saponification. The next five cases occurred in bodies drowned in the Hooghly. The first was a Bengali, drowned in a storm, the body was examined three days after, and the internal organs were saponified, the second case was an European

adult, who fell (September 1881) into the river the body was found after two days, and "all external portions of the body were found to be saponified." The third case was that of an European sailor, who fell into the Hooghly on 6th October 1883, the body was found after eight days and ten hours, "the external parts, heart, liver, spleen, &c, were saponified." The fourth case was also a sailor drowned in the river on 2nd February 1885, the body was not recovered for fifteen days, and was "then in an advanced state of saponification." The fifth case was an European youth, who fell into the river on 26th September 1885. The body was recovered after seven days and was found to be in an advanced state of saponification.

DR COULL MACKENZIE THEREUPON REMARKED—

"The case of Sk Etwarri and Athow (the first two) were most interesting as well as instructive, as they show that the conditions obtaining during the rainy season in the soft and porous soil of Lower Bengal, saturated with moisture, and of a high temperature facilitate this condition of putrefaction, and in three or four days have the power of saponifying the external parts of the body, even though buried in a wooden coffin, as was the case of the Chinese woman Athow.

The last five cases point to the fact that in the river Hooghly, during one of the months of the cold season (February) not only the external tissues of a body, but also six of the internal organs were found to be saponified in a little over 15 days, that in one case during the hot season (May) the external tissues as well as the internal organs were saponified in three days. Lastly in the hot, steamy, rainy months of September and October in three cases saponification was found, both externally and internally from 2 days to 8 days 10 hours. In the case of the lad Chapman, the fleshy portions of the undigested food in the stomach were converted entirely into adipocere in 7 days."

The writer then concludes his paper by quoting from European authorities, who consider that saponification does not take place in Europe in less than three or four months, and Taylor states that the shortest period of the occurrence of adipocere in water is a "little more than five weeks."

These observations are of the first importance, and those who knew Dr Coull Mackenzie's careful methods and long experience had little hesitation in accepting the above observations, but in the year 1897, a paper appeared in our columns (April, p 134), which strongly challenged these conclusions. This was from the pen of Dr G H F Nuttall, now of Cambridge, who was then studying in the pathological Laboratory of Prof Thierfelder in Berlin.

Dr Nuttall pointed out that Mackenzie's observations were the only ones he could find bearing upon the subject of adipocere formation in hot climates, and they were in opposition to received opinions on the subject based on experiences in Europe. He also stated that "Normal internal organs are not converted into adipocere," unless they have been in a state of fatty degeneration. Dr Nuttall, while admitting that "adipocere may be formed more rapidly at a high temperature," concluded his paper (p 135) by saying that "besides the doubtful observations above noted (i.e., Mackenzie's) we have not found any publication mentioning the occurrence of adipocere in warm countries." He also suggests that Mackenzie may have been "mistaken," for "Hofmann states that muscular tissue which has macerated and putrified in water presents in appearance sufficiently similar to deceive the unpractised eye."

In the next issue of this Gazette Surgeon Captain (now Major) D M Mon, I M S, challenged Dr Nuttall's arguments and protested against the way in which he dismissed the observations of such a careful and experienced observer as Coull Mackenzie, and in support of the latter's statement he quoted a case of his own, in which he had a body exhumed in October 1891 near Chittagong, which had been buried three weeks before on the banks of a large tank. On exhuming the body Major Mon was pleasantly surprised to find no disagreeable smell and the body had undergone saponification, so much so that he was able to confirm the report of the first *post-mortem* examination in every particular. This body had been buried in the end of the rainy season, in about 3 feet under the soil, which was alluvium with a substratum of clay, and the soil was moist owing to the rainfall of three previous months.

The next case which we can find recorded in India is one sent to the Chemical Examiner, Calcutta, by Dr Reginald S Ashe from Myinensingh. This was the case of a boy aged 9, who was buried on 30th September 1897 (see *Indian Medical Gazette*, March 1898, p 83). Circumstances led to the exhuming of the body on the fourth day after, and Dr Ashe found "the skin of the abdomen, chest, and upper and lower extremities dry, mottled and waxy-looking, and free from all offensive odour. He sent the heart, some of the omental fat, muscles and skin to the Chemical Examiner, who reported that "very

partial saponification had taken place in the tissues." Dr Ashe concluded that "adipocere can begin to form in India four days after death," under conditions as in this case, where the body was buried in a shallow grave, covered with nine inches of water.

It is difficult, in view of Mackenzie's cases and the two just quoted, to resist the conclusion that the opinion held in Europe needs considerable modification. In Dr Ashe's case not only did chemical analysis prove that saponification had begun, but the specimens were shown by Major C H Bedford, I M S, the Chemical Examiner, to the late Dr Evans, then Professor of Pathology at the Medical College, Calcutta, and both medical officers entertained no doubt as to the reality of the saponification.

Adipocere is not a definite chemical compound, but a mixture of different substances, and in this way differences in its colour and consistency may be explained (Quain, New Edition, p 27).

We may add that the writer in Quain has no hesitation in accepting the accuracy of Mackenzie's observations which he quotes, and in fact says that "warmth is favourable to the process, which takes place with great rapidity in tropical countries."

We have referred to this controversy for the purpose of putting it before the present generation of our readers. It is to be hoped that all Medical Officers who read this will bear it in mind when next they have to examine a body recovered from water or exhumed from a damp grave, and that they will remove and send to the Chemical Examiner of the Province specimens of any portions of the muscles or fatty parts which they suspect to be saponified.

A few chemical examinations in cases where the duration of the period of immersion or burial is known would soon settle the question forever.

TABLES OF WEIGHTS OF VISCERA.

The only two tables of weights of viscera known to us, which have been compiled in India are—(1) that given by Assistant-Surgeon Bela Ram in the *Transactions* of the first Indian Medical Congress of 1894, and (2) that published by Major W J Buchanan, I M S, and Assistant Surgeon F J Daley in the *Indian Medical Gazette* (February 1902, p 56). We have also received a table carefully compiled by Captain

R. H. Maddox, I.M.S., from the records of the Presidency Central Jail, Calcutta. This table agrees very closely with the one published in our columns in February last, and adding the two together we get the following tables, which may be considered to be as correct and reliable as any such table can be, and to be founded on a sufficiently large number of cases to be of value as an indication of what the normal weight of the viscera of the people of Bengal and Bihar is, always bearing in mind that the viscera are taken from men who have died of disease. The first table refers to adult male Bengalis and Biharis only, the second table is for females of the same races.

Table I—(Males)

—	No of cases	Average weight	Highest	Lowest	Causes of death
Liver	333	44 oz	108(a)	13(b)	(a) Dysentery (b) Do
Spleen	314	10½	64(a)	1(b)	(a) Malarial fever (b) Chronic dysentery
Lungs, R.	224	16	62(a)	5(b)	(a) Bronchitis (b) Dysentery
„ L	224	14½	43(a)	5(b)	(a) Lobar Pneumonia (b) Anæmia
Heart	238	7½	20(a)	4(b)	(a) Apoplexy (b) Pneumonia
Kidney, R.	246	3½	8(a)	2(b)	(a) Pneumonia (b) Chronic Dysentery
„ L	246	3½	8(a)	2(b)	(a) Tubercle of lungs (b) Pneumonia.
Brain	143	44	56(a)	33(b)	(a) Pneumonia. (b) Malarial fever
Average height	5 ft. 3 in				Based on 28,000 cases, I M G, Oct 1897
Average Weight.	110 lb				Do do

Table II—(Females)

—	No of cases	Average weight.	Highest.	Lowest
Liver	88	oz 37½	oz 62	oz 16
Spleen	91	6½	48	1
Lungs, R.	49	9½	20	6
Lungs, L	49	9½	17	4
Heart	46	6½	9	4
Kidneys, R	68	3½	6	1
„ L	68	3½	6	1
Brain	7	37	42	26

THE FORGERY OF THUMB IMPRESSIONS

THE recent announcement in the *Pioneer*, for 26th January 1902, of the ease with which thumb impressions can be forged is one of considerable importance, and merits notice in a Medical Journal, the more so as it happens in this case the discovery was made by one of our regular contributors, viz, Major Henry

Smith, M.D., I.M.S., Civil Surgeon of Jullundar. We mention this fact as hitherto we have seen no public acknowledgment of Major Smith's share in this useful discovery. As the *Pioneer* says, it is difficult to say which is the more annoying—the simplicity of the process or the fact that no one foresaw it.

The *modus operandi* is as follows—The original thumb impression is covered with a piece of damped paper and pressed, by which method the reverse of the original is transferred to the damped paper. Another piece of damped paper is then put over the reverse and pressed, and a true copy of the original is thus obtained.

We have seen specimens of finger impressions thus obtained, and have successfully experimented with the method, and we are of opinion that with some practice it is by no means impossible to obtain a very clear and defined copy of the original.

There is no doubt but that this discovery of Major Smith's is one of considerable interest and will seriously affect the value of this primitive as well as up to-date method of signature.

SOME CADAVERIC PHENOMENA

THE following observations are reproduced from Dr. Coull Mackenzie's paper in the *Indian Medical Gazette* (1888), as they are of perennial interest, and have not been fully noticed in most text-books on medical jurisprudence. It must, however, be noted that the observations were made in the rainy season in Bengal (from July to September 1883) with an average temperature of 85°F.

Muscular irritability—Of 36 cases, the longest period of duration was 4½ hours, and the shortest 30 minutes, average, 1 hour 51 minutes.

Commencement of cadaveric rigidity—In 36 cases the latest period was 7 hours, the earliest 40 minutes, average, 1 hour 56 minutes.

Duration of cadaveric rigidity—The longest period of duration was 40 hours, the shortest 3 hours, average, 19 hours 12 minutes.

Period of appearance of cadaveric lividity—The latest period was 31½ hours, the shortest 1 hour 38 minutes, average, 14 hours 33 minutes.

Period of appearance of green discolouration—The latest period at which the green discolouration of putrefaction appeared was 41 hours 30 minutes, the earliest was 7 hours 10 minutes, average, 26 hours.

Period of appearance of immature maggots on the ova of flies—The latest period was 41½ hours, the earliest 3 hours 20 minutes, average, 25 hours 57 minutes

Period of appearance of mature or moving maggots—The latest period was 76 hours, the earliest was 24 hours 18 minutes, average, 39 hours 43 minutes

Period of appearance of vesications on the surface of the body—The latest was 72 hours, the earliest was 35 hours, average, 49 hours 34 minutes

Period of formation and evolution of gases (manifested by distention of the abdomen or by exudation of froth from the mouth and nostrils, or by the expulsion of fæces from the anus) The latest period at which gases were evolved was 34½ hours, the earliest 5 hours 50 minutes, average, 18 hours 17 minutes.

A MONUMENT has recently been erected to the memory of William Beaumont, whose experiments upon the gastric juices in the case of Alexis St Martin are recorded in every book on physiology. The monument is erected in Fort Mackinac in Michigan, U S A, and bears the inscription "Near this spot Dr William Beaumont, U S A, made those experiments upon Alexis St Martin which brought fame to himself and honor to American medicine"

Beaumont was a Surgeon in the U S Army, and the experiments were made so long ago as 1822 to 1825

A RECENT report says that in the Philippines tuberculosis kills more people than either malaria or dysentery. The same is true of many parts of India. Yet tuberculosis has been called the "white man's plague" and till recently it was thought to be rare in India!

OWING to this being a special number, entirely devoted to legal medicine, we have been obliged to hold over many interesting articles in hand, which we hope will appear in our July number



Service Notes

THE following officers get the good service pensions this year of £100 Lieutenant-Colonel Joshua Duke I M S, Lieutenant-Colonel E Man, I M S, and Colonel Clarkson, I M S

LIEUTENANT COLONEL JOSHUA DUKE entered the service in March 1872, and had been employed in the Foreign Department. He has been a frequent contributor to our columns, and is author of several books, e.g., on Banting in India, and was the editor of several editions of Ince's well known Guide to Kashmir, a new edition of which, we understand, is in the press, and will soon be published by Messrs Thacker, Spink & Co. Colonel Duke has recently officiated as P M O of the Presidency District. He will be 55 on 11th June 1902.

LIEUTENANT COLONEL E MAIR, M D (Aber), entered the service on 31st March 1874. He entered the Jail Department of the N W P and Oudh, and was for many years Superintendent of the Bareilly Central Jail. On the retirement of Lieutenant Colonel D W D Comins, I M S, he was appointed Inspector General of Jails, Bengal, and has been a most popular as well as experienced and capable head of that Department. He will be 55 years of age on 3rd July next.

LIEUTENANT COLONEL J W CLARKSON, I M S, who is to retire on 31st March 1903, has been for six years past Sanitary Commissioner of Bombay. His birth date is given in the War Office Army list as 17th September 1852.

LIEUTENANT COLONEL A H C DANE, M D, L M S, A M O in Central India, is granted nine months' combined leave under furlough rules of 1895.

LIEUTENANT COLONEL G HALL, F R C S, I M S, is appointed Colonel, dated 1st January, but tenure of appointment to reckon from 2nd March 1902.

HARVEY MEMORIAL FUND

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Notice

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

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BOOKS, REPORTS, RECEIVED

Acute Dilatation of Stomach, by H C Thomson (Baillière, Tindall & Cox)
 Diagnosis by means of Blood, by B L Watkins (Physicians Publishing Co., New York)
 R Ross Malarial Fever (Longmans & Co)
 Sir Wm Bennett's Massage in Fractures (Longmans & Co.)

Original Articles

CLIMATIC BUBOES

BY ARNOLD CADDY, F.R.C.S. (ENG.),

*Member of the Clinical and Pathological Societies
of London**Surgeon to Rai Bhagwan Das Bogla Bahadur's Hospital,
Calcutta*

FROM time to time cases are met with in surgical practice in the tropics of inflammation of the lymphatic glands of the groin, in which there is no history of recent venereal disease or wound sepsis, in fact it is extremely difficult to assign to them any reasonably efficient cause. There have in addition appeared during the last few years several contributions to the literature of this subject, and there has been much speculation as to the aetiology of the disease. Until this is definitely decided, however, the term 'climatic bubo' used provisionally by Scheube in the last edition of his work on tropical disease is as appropriate as can be, considering the present state of our knowledge.

From the materials at hand here in Calcutta, I have examined the literature of this subject, and the following résumé may prove interesting. In 1879, Bodnar and Ruber, under the title of "bubo malaricus," described cases of swelling of the lymphatic glands, which for the most part appeared in the inguinal region, and existed as an accompanying symptom of intermittent fever, or were associated with remittent fever in persons who had had malarial fever, or who shewed more or less malarial cachexia. These buboes often attained considerable size, as a rule were not very painful, and might or might not suppurate. Scheube is of opinion that the malarial nature of these buboes is doubtful.

In 1886, Segard described cases he saw in Madagascar, and in all but one case were the inguinal glands affected. They were generally associated with evening fever, loss of appetite and emaciation, and in only one case was there suppuration. Quinine, cinchona and iodide of potassium seem to have been useful in the treatment.

In the same year, Martin published a paper on the cases he saw, on the north-east coast of Sumatra, of swelling of the inguinal glands, affecting the upper chain most frequently and accompanying remittent fever. These cases appeared in patients the subjects of malarial cachexia or who had suffered from malarial fever. The swellings were not painful, and sometimes reached enormous size. The treatment found most suitable was change of climate first and foremost, pressure applied locally and quinine,

iron and arsenic internally. Sometimes suppuration took place requiring surgical interference and an ugly fistula was often left. Martin regarded these cases as malarial in origin, but Scheube observes, as 90 per cent of Martin's patients suffered from malaria, and the treatment was anti-malarial in every case, his arguments therefore lose much of their significance.

In 1893, at a meeting of the Hong-Kong Medical Society, Cantlie described a slowly developing non-venereal bubo occurring in one or other groin, attended by weakness, anæmia and fever. The groin glands were discrete at first, but gradually amalgamated and presented a mass as big as half an orange or larger. At the end of twenty days, points of boggy softness occurred, and if left to itself, the skin became undermined and pus found its way to the surface by two, three or more fistulous openings. The gland when cut into showed many focal points of suppuration and broke down easily under the fingers. The treatment was early excision of every gland that could be felt or seen. Later on Cantlie regarded these cases as allied to *Pestis minor*.

In 1896, Ruge recorded over 38 cases of inflammation of the inguinal glands observed by him in 1888 and 1889 on the East African Coast. In all these cases venereal disease and traumatism could be excluded, and they were therefore regarded as climatic. The disease sometimes began with fever, at others fever followed the swelling, and again the disease might be without fever at all. The inflammation affected the inguinal glands on one side as a rule, but sometimes both sides were attacked together or one side after the other. The swelling in a few days reached the size of a goose egg, and sometimes the whole mass of glands would be affected. In 60.5 per cent of the cases the swellings subsided, and in 39.5 per cent incision or extirpation was required. The disease would last from a few days to several months, and in a few cases there would be a recurrence. Where the fever had defied quinine, removal of the glands would be followed by a cessation of fever.

In the same year, Godding published his article on the occurrence in the British Navy of non-venereal or climatic bubo, a disease characterised by fever, enlargement of the inguinal glands in one groin (seldom in both), increasing malaise and anæmia. There might be a history of strain or trivial injury. Naval statistics for several years were quoted, and showed how bubo was most frequently observed on the East Indian, China and West Indian stations. Godding considered that operation on these cases was to be deprecated.

Again in 1896, Lesueur-Florent quoted five cases that occurred on an unhealthy ship off Madagascar, and of these the glands in both groins were in one case affected. The swelling of the glands set in suddenly, and after one or more

days fever supervened. The swelling was soft and slightly tender. At first single glands would be affected, and then through swelling of the periglandular tissues a regular tumour would form. Under anti-malarial treatment with quinine and arsenic, the fever would subside in a few days, but the swellings took a variable time to disappear. Lesueur Florent thought malaria played only a subordinate part in the ætiology of this disease.

In 1877, Skinner recorded numerous cases of inguinal bubo of unknown origin observed by him in Bengal. Usually fever of a remittent type preceded the appearance of the buboes. The patients were often cachectic or had suffered from malaria, or buboes appeared while they were under treatment for dysentery. In many cases a search was made in the blood for the malarial parasite, but with no success. Some intestinal disturbance was almost always observed, and Skinner suggested that the buboes may have been due to a secondary infection from the mesenteric glands, or have had their origin in small boils or *dhobi* itch. In the same year, Schon mentioned that in Sumatra there were seen cases of idiopathic suppuration of the lymphatic glands, and symptoms of peritonitis were often seen as a complication.

In 1898, an extensive communication was made by Nagel, who saw in German East Africa a number of cases of bubo among officials and planters, and with them they appeared to be due to the operation of climatic causes only. The patients had been already over a year in East Africa, and a small proportion had suffered from malaria. In no case did fever rise higher than 39°C (102°F), and only in two cases did suppuration lead to incision of the glands. The swellings which were more or less painful developed quickly, and the fever disappeared after the local affection had subsided.

In 1899, Scheube recorded 16 cases he had observed in Japan, the buboes were mostly unilateral and affecting the upper chain of inguinal glands, being bilateral and affecting the lower chain of glands only once. Suppuration requiring incision took place in four cases. The disease was sometimes attended with fever, and in one case fever preceded the swelling of the glands by ten days. The majority of Scheube's cases were in young men from 17 to 29, one case occurred in a man aged 46, and one in a woman aged 49. Most of the cases were seen in spring or autumn, and the patients followed the most varied occupations.

I do not think there can be the smallest doubt but that we have here, as described by various surgeons, one and the same disease to deal with. I will now proceed to relate the histories of the cases that have been seen by me during the last ten years of surgical practice in Calcutta, and it is noticeable how closely their description coincides with that of the authorities just cited.

CASE I—Aged 26 European, male, single, working in a merchant's office. Living in India for the past ten years, with one holiday of three months to England in 1891, and kept good health on the whole. No history of malarial or venereal disease. Habits temperate.

He consulted me first on 16th March 1893, stating that he had strained his left thigh while riding three weeks previously, and two weeks later he noticed a lump in the left groin which seemed to be getting larger.

On examination, there was a soft, slightly tender swelling, the size of a walnut, of one of the inguinal glands lying in front of the internal inguinal ring. The patient was a tall, spare and pale young man, with soft flabby muscles. There was no sign of any skin abrasion on the genitalia or left buttock or corresponding lower extremity.

Rest in bed was enjoined, and Goulard's extract and opium lotion prescribed for local application.

On the 19th March, swelling was less tender and had slightly decreased in size. Belladonna plaster was prescribed locally, and the patient was allowed to get up and sit quietly in his chair at office.

The swelling remained in statu quo for the next six weeks, at times getting larger, and then subsiding. A tonic of iron and arsenic was prescribed. He left Calcutta for Simla during May, and remained there till the following November. On his return he came to see me, and stated that after arrival in Simla the gland began very gradually to decrease in size, but did not disappear till the beginning of September. He gave up all local treatment while in the Hills, but continued taking his tonic. On his return to Calcutta, he was stouter and had improved in condition in every way, and no trace of the pre-existing glandular swelling was discernible.

CASE II—Aged 23 European, male, single, in mercantile employ. Born in India, sent home to England as a child returning at the age of 17. He was temperate, and enjoyed excellent health as a rule. There was no history of malarial poisoning. He had gonorrhœa in 1893, followed by a slight and very chronic gleet, due to granular inflammation of the prostatic urethral mucosa, and which was treated by me with local applications of silver nitrate solution through the urethroscope in 1894. In the middle of February 1896, he noticed a lump in his left groin for which he could assign no cause. It steadily increased in size, and he consulted me about it early in the following March.

On examination, there was a diffuse, soft, almost painless swelling, the size of an orange, among the inguinal glands over Poupert's ligament, no fluctuation was present, and apparently more than one gland was implicated. The patient was tall and spare, and seemed otherwise quite healthy. No local skin abrasion was found after careful inspection.

Rest in bed was ordered, and Goulard's extract and opium lotion applied locally at first, and this was followed a week later by the application of Ext. Belladonna c. Glycerin p. seq. with pressure under a spica bandage, but without avail, for the swelling obstinately refused to subside. The temperature was frequently taken during the day, but never rose above 99°F . Lin. Iodi was applied locally without result, and at length, being tired of lying in bed, the patient asked if the glands could not be removed as the loss of time was important in his case.

Accordingly on 7th April 1896, under chloroform, I dissected out all the affected glands in the left groin, and closed the wound with catgut sutures applying pressure over salicylic acid cotton wool, and inserting no drainage tube. On cross section of the excised glands no pus was visible.

On 16th April, the dressing was removed, and the wound found healed by first intention. The patient remained well, and in February 1899, he went away to South Africa with Lumsden's Horse, and returned to India a year later in excellent health.

CASE III—Aged 23 European, male, single, Civil Engineer work requiring much standing about and travelling over India. Lived always in England until November 1896, when he came to India (Calcutta). Since arrival in India he had two attacks of acute follicular tonsillitis. Habits very temperate. No history of venereal or malarial disease. During May 1897, he was troubled with "Dhobi itch" on the scrotum and inside of both thighs, and which was soon cured with chrysophanic acid. During the last week of July 1897, he noticed lumps in both groins for which he could assign no cause. These increased in size and became slightly painful on standing about, he also had slight fever now the temperature rising to 100° of an afternoon with some sweating at night time.

On 8th August 1897, I saw him for the first time. He was lying in bed on account of the fever. He was a pale, delicate looking young man. On both sides the upper chain of superficial inguinal glands was enlarged and tender, the individual glands could be felt the size of cohnuts, but no fluctuation was perceptible.

No skin lesion was visible to account for the glandular swellings. The other organs were healthy. He was advised to remain in bed and take five grains of quinine thrice daily, and apply Goulard's extract and opium lotion locally.

On 9th August, the temperature rose to 101° the night previous, and the glands had increased in size and were more tender.

On 11th August, as the daily fever persisted and the glands showed no signs of subsiding, in fact fluctuation was perceptible on the left side, it was decided to excise the affected glands. The quinine and lotion were discontinued.

On 12th August, under chloroform, the enlarged glands from both groins were dissected out, and the wounds packed with iodoform gauze. On cross section foci of suppuration were visible in all the excised glands.

On 13th August, the temperature fell to normal and remained so afterwards.

On 14th August, the wounds were dressed and fresh iodoform gauze packing inserted daily till 19th August. On 20th August, the wounds were dressed with strips of lint soaked in Lin. Camphoræ and Ol. Terebinth, p. æq.

On 22nd August, the patient got up and went for a drive. On 26th August, the wounds were looking well and he left for Darjeeling, where they healed rapidly.

On 8th November, he returned to Calcutta from the hills, he was looking well and had gained in weight.

CASE IV—Aged 34 European, male, single, working as a railway engineer, employed on surveying and construction. Living in India since 1893. In 1896, while in Bombay he contracted four chancres which were diagnosed as non syphilitic and no secondary symptoms ever appeared. He, however, was treated with mercury for six months as a precaution. He had had malarial fever in the rainy season in Central India on several occasions, but never severely, and it was always amenable to quinine. Habits temperate and very active, always living in the open air and fond of sport and games. In November 1898, from no apparent cause he noticed a swelling in the left groin which was almost painless, but steadily increased in size in spite of being painted with iodine. He had been getting thinner lately.

On 8th December 1898, he consulted me first, he then had a large swelling in the left groin below Poupart's ligament composed of several swollen and slightly tender glands. The glands were soft, but gave no evidence of fluctuation. No skin lesions were visible on the genitalia or left lower extremity. He could not remember having strained himself, and he asserted that he had had no fever while the swelling was there, but he never took his temperature.

I recommended excision of the glands, and he made preparations accordingly and took his temperature daily which registered 99°5 of an evening.

On 13th December, under chloroform, I dissected out all the enlarged glands and packed the wound with iodoform gauze.

On 14th December, during the night, he urinated into his dressing which was changed. The temperature rose to 99° only in the evening. The next day the temperature remained normal, and the wound was dressed daily until 6th January 1899 when a strip of lint soaked in Lin. Camphoræ and Ol. Terebinth p. æq. was substituted for gauze.

On January 26th the wound was healed, and the patient feeling well returned to his work, and soon regained his former weight.

CASE V—Aged 21 European, native of Smyrna, in Asia Minor, male, single, employed all day standing about in a jute press house. Always temperate. No venereal or malarial history. Resident in India nine months only.

On 15th July 1899, he noticed a tender lump in the right groin which came up suddenly and increased in size. He could give no reason for its appearance. He had been losing weight latterly and felt feverish at times.

He consulted me a week later. There was a soft, slightly tender swelling in the right groin over Poupart's ligament. No cutaneous lesion likely to give rise to this was noticeable, beyond a little "prickly heat" on the corresponding thigh. Patient was somewhat thin and pale.

He was ordered to rest and take his temperature every two hours during the day and record it. Local sedative treatment with Belladonna and Glycerin and pressure was prescribed, as recommended by Drake Brockman.

On 29th July, I saw him again, the temperature had been rising to 99°5 every afternoon about 4 P.M., and subsiding to normal at bedtime. Over the centre of the swelling was a little redness, and fluctuation was just perceptible. An incision was made and a very small quantity of pus let out, and the opening was dressed with iodoform gauze.

The wound was dressed daily and granulated very slowly, but healed eventually, and at the end of September after a fortnight's stay in Narainganj, the patient was quite well again.

CASE VI—Aged 21 European, native of Smyrna, in Asia Minor, male, single, working as a clerk and standing about all day at the Kidderpur Docks. He arrived in India on 14th December 1900, having had slight fever on the voyage out which was treated with quinine. On 28th December, after his arrival he had slight fever again lasting two weeks. There was no venereal history, and he was always very temperate. He remained quite well till the first week in April 1901, when after a long walk, he detected a painful swelling in the left groin. A week later he consulted Dr. Coulter of this city, who noted a swelling of one of the left inguinal glands, which was tender and soft, but not fluctuating. There was slight remittent fever present, which was said to have been never over 100°, and the patient was anæmic in appearance. No skin abrasions of the genitalia, buttocks or corresponding lower limb were perceptible, with the exception of some "prickly heat" that had been scratched. Rest in bed was ordered and 15 grains of quinine daily prescribed internally and Emp. Belladonna locally. The fever persisted, and there was a steady increase in size of the swelling, which though soft, gave no evidence of fluctuation. After consultation it was decided to remove the glands by operation.

On 12th June, under chloroform, I dissected out three enlarged glands and packed the wound with iodoform gauze in order that it might heal by granulation. Dr. J. Nield Cook, M.O.H. of Calcutta, was present at the operation, and afterwards made cross section of the glands, which showed numerous small separate foci of suppuration. Several cultures were taken from the glands at the same time.

On 12th June, the gauze packing was removed and replaced. Dr Nield Cook kindly reported that his cultures showed the presence of mixed staphylococci.

From this date the wound was dressed every other day and healed rapidly. The fever stopped the day after operation, and the patient soon regained weight and strength.

CASE VII—Aged 26 European, native of New Zealand, male, single. Came to India 2½ years ago, living for 18 months in Bombay, and for the last year in Calcutta, where he is employed in a house of business. Temperate and having neither venereal nor malarial history.

At the beginning of March 1901, he felt his left groin sore and noticed a swelling there. He at once consulted Dr Coulter who detected numerous marks on his legs where he had been scratching flea or mosquito bites. He had a soft swelling of one of the left inguinal glands, and for this a belladonna plaster was prescribed. The swelling remained in statu quo for nearly a month not increasing in size, and giving little or no pain, and not interfering with business.

Fluctuation then became apparent, so the swelling was incised and exit given to a small quantity of pus. This was dressed daily, but a sinus remained which kept discharging a little thin purulent fluid, however, the patient went about his work. Early in June he consulted Dr Coulter and myself as the sinus was still open, and it was decided to operate and remove any diseased glands. On 12th June, under chloroform, the groin was laid open, and three glands were dissected out. These were suppurating and seemed to communicate with the sinus. The wound was packed with iodoform gauze and dressed daily. On 19th June, the patient was allowed to sit up, and by the end of the month healing had taken place.

CASE VIII—Aged 24 European, single, male. In India (Calcutta) four years. Employed in the office at a jute mill. Temperate, and no venereal history. At the end of May 1901, he contracted fever, the temperature ranging daily from 101° to 103°. He was under the treatment of the Civil Surgeon at Barrackpur, and he was given 20 grains of quinine daily without much avail. After ten days the fever somewhat subsided, and he then noticed swellings in both groins. These steadily enlarged and became tender. He consulted Dr Coulter on the 8th June as he still had fever, the temperature being 101° of an evening, but always normal in the morning. He was anæmic and weak. The tongue was coated and the bowels constive. He had no sweating beyond a little moisture of the skin, chiefly of the head and neck of a night time. On both sides the lower chains of inguinal glands could be felt the size of nutmegs, soft and slightly tender.

On 10th June, he was sent to Colombo, and on the sea voyage down, he lost his fever, the morning temperature being subnormal.

On 27th June, he returned to Calcutta from Colombo and the next day he had fever, and in consequence I saw him for the first time. He said the glands had not subsided, if anything they had increased in size, they were soft, however, and no fluctuation was perceptible. The patient was positive there had been no skin lesion to account for the enlarged glands, except that he had had a few 'pimples' round the roots of the hair on the thighs. As every variety of treatment had been tried both local and general, I decided that the only course was to remove the glands, to this the patient consented and entered a private nursing home for the purpose.

On 29th June, under chloroform, all the enlarged lymphatic glands were carefully dissected out of both groins, and the wounds carefully packed with iodoform gauze. The glands on section showed numerous small foci of suppuration, and Dr J Nield Cook kindly made cultures from them, and later on reported as a result an abundant growth of mixed staphylococci.

The temperature fell to normal in two days and remained so. The wounds healed rapidly so that by

23rd July he was able to be at work again and he soon regained his former weight.

On 17th September, he came to report himself as he was going home for nine months. He was feeling quite well.

CASE IX—Aged 26 European, native of Smyrna, in Asia Minor, male, single. In India (Calcutta) six months only. Work requiring him to stand all day in a jute godown. Very temperate, and no venereal history.

On 5th May 1901, he began to have daily remittent fever, temperature ranging from 99°5 to 101, and this continued not yielding to quinine. On 10th May, he noticed, without any apparent cause, a lump in his right groin which steadily increased in size in spite of local treatment. At first it was painless, but it became more and more painful as it grew larger. The fever persisted, and at the end of May he consulted Dr Coulter who found a swelling as big as a walnut in the right inguinal region. This was soft and over its centre fluctuation was faintly felt.

On 1st June, the swelling was incised and dressed, but a sinus persisted. However the temperature fell, rising only to 99°5 of an evening.

On 8th July, as the sinus had shown no tendency to heal under chloroform, I dissected out several small suppurating glands and packed the wound with iodoform gauze. The patient being in a private nursing home for the purpose.

The wound was dressed daily, and the temperature shortly became normal.

On 21st July, the wound was granulating well and by the middle of August it was quite healed. The patient rapidly regained weight.

CASE X—Aged 26 European, native of Germany, single, male. Working in a house of business and employed much in standing about in the native hide bazar. Came to India in November 1899, and kept good health in Calcutta. In May 1897, he had a chancre followed by a rash and was under the care of a doctor in Hamburg who prescribed no medicine for him internally, but gave him a two months' course of tannin baths and a gargle, and he never had any further sign of syphilis. Habits temperate.

On 15th June 1901, he noticed a lump in the left groin the size of a pea, this was almost painless, but increased steadily in size.

On 19th June, he consulted me, he then had a swelling of one of the lower chains of the left superficial inguinal glands, the size of an acorn nut. The skin of the left lower limb was free from any abrasion except a little "prickly heat". He was advised to rest and belladonna plaster was prescribed.

On 29th June, he began to have fever every evening, the temperature rising to 100°.

On 26th June, the temperature rose to 102° and the swelling in the groin increased to the size of an orange, it was soft and comparatively painless. He was sent to bed and 15 grains of quinine were given daily. The fever of a remittent type, ranging from 100° to 102°5 continued, uninfluenced by the quinine.

On 30th June, a specimen of blood was taken, and Vidal's serum test for enteric fever was tried by Dr Nield Cook, who reported no reaction with a dilution of 1 in 20. No symptoms of enteric were clinically observable.

On 2nd July, the whole of the lower chain of superficial inguinal glands became enlarged and somewhat tender. The question of plague infection arose, but the patient's symptoms did not appear severe enough to warrant a diagnosis of plague being made. It was today that for the first time he related the history of his attack of syphilis in 1897, and as he had never taken mercury, it was thought advisable to try the effect of bimodide of mercury in a mixture internally, giving 5 grains of quinine morning and evening at the same time.

On 9th July, the patient's fever continued and the swelling remained in statu quo, the quinine was omitted as it seemed without effect.

On 15th July, the temperature shewed no change, and the glands remained the same size, though the tenderness did not increase. He was sent into a private nursing home.

On 21st July, the Bimodide mixture was stopped, and as I was now convinced the glandular swelling was the cause of the fever, I recommended excision of the enlarged glands.

On 23rd July, under chloroform, the affected glands were dissected out, and the wound packed with iodoform gauze and allowed to granulate. The glands on cross section after operation shewed multiple foci of suppuration. The temperature fell to normal shortly after the operation, the wound being dressed daily.

On 11th August, the patient was well enough to leave the nursing home. He shortly after went to Mussoorie, where he spent September and October. The wound healed, and the patient soon regained his former weight and strength.

CASE XI—Aged 27, European, male, single, working in Calcutta as a professional man. Born in India, living in England as a child and returning to India at 18. Since his return to India he has suffered from malarial fever on many occasions with splenic enlargement. He remained free from fever during 1901. He had gonorrhoea very slightly, lasting 14 days in October 1901. No history of syphilis. Habits temperate and very active.

On 1st December 1901, when riding a restive horse in a military saddle, the front of his thighs became frequently jolted against the saddle wallets. This caused no abrasion of the skin and no visible bruise but produced some tenderness.

On 7th December, he noticed a lump in the left groin and at once consulted me. On examination, I found one of the lower chain of left inguinal glands was swollen to the size of a chestnut, it was soft and only slightly tender. The patient was pale and his muscular condition was poor, in fact, he said he had latterly gone "all to bits." Rest in bed was ordered and emolument belladonnae prescribed locally and quinine 20 grains daily internally.

The swelling grew larger, and several of the glands began to participate in the swelling, but no fluctuation was to be felt. There was a daily rise of temperature to 100° every evening. As no improvement was manifested, excision of the glands was advised, to which the patient consented, and he entered a private nursing home for the purpose.

On 23rd December, under chloroform, I dissected out several enlarged glands, including two which closely embraced the termination of the internal saphena vein. The wound was packed with iodoform gauze and allowed to granulate. On cross section all the excised glands were found to contain many small foci of suppuration.

The wound granulated rapidly and the temperature fell to normal. By the end of January healing had nearly taken place, and the patient was able to leave for New Zealand for a few months' change and holiday. By the time he had reached Fremantle, W. A. healing was complete, and he felt quite well and strong.

CASE XII—Aged 29, European, male, single. Born in India, spent boyhood at school in the Hills, otherwise lived always in the Plains, except for two years spent in England. For the last eleven years has lived in Sylhet working as a tea planter. He suffered much from malarial fever up to three years ago. Had gonorrhoea four years ago. Habits temperate. Has lost much weight during the past six months.

In the middle of March 1902 he had to ride 36 miles at a stretch, two days later a lump formed in the right groin which increased in size and was not painful. In the second week in April the lump was incised and pus

was let out. Then a lump formed in the left groin which soon attained the size of a pigeon's egg, and became more painful than that on the right side. This gradually subsided however. When the lumps formed he began to have slight fever at night, but he had been free from fever for the past fortnight and was sleeping better. The wound in the right groin did not heal, and it was being dressed daily with Ung. iodoform. He had taken no quinine during this illness.

On 4th May 1902, I saw this patient for the first time on his arrival in Calcutta. He was thin and feeble. His muscles were soft, and he was somewhat anæmic as regards the roof of his mouth, though the cheeks were sun burnt and almost ruddy. His organs were healthy, but the spleen descended one inch below the costal margin on deep inspiration. In the right groin there were two sinuses connected with one another, and the skin all round was much undermined. Around the sinuses several small lymphatic glands could be felt, but firm pressure caused very little pus to exude from the openings. In the left groin there was a small fluctuating swelling, the size of a cobnut. Incision was recommended on the left side and excision of the undermined skin and scraping of the sinuses on the right. To this the patient consented.

The same afternoon at 5.30 P.M. I made an examination of the blood with the following result—

Red corpuscles	= 3,540,000 per cubic millimeter
Leucocytes	= 13,500 "
Polynuclear cells	= 53.3 per cent.
Lymphocytes	= 24.7 "
Large mononuclear cells	= 20.2 "
Eosinophile cells	= 1.8 "

No malarial parasites were visible.

On 5th May, after sterilising the parts and freezing with ethylchloride, I incised the swelling on the left side and gave exit to one drachm of pus, all the undermined skin on the right side was then removed and all broken down tissue scraped away. Both wounds were dressed with double cyanide gauze and boric acid wool and a double spica bandage.

On 7th May the dressings were changed, both wounds looking well. Strips of lint soaked in Tinct. Camphore c. Ol. Terebinthinae p. æq. were laid in the wounds and covered with salicylic acid cotton wool and a double spica bandage. A pill containing arsenic $\frac{1}{4}$ gr. strychnine $\frac{1}{4}$ gr., quinine hydrochlor. gr. ii, was prescribed to be taken thrice daily after meals. Arrangements were made for him to leave Calcutta for Colombo for a change on 9th May.

It will be seen that these twelve cases all occurred in young adult European males between the ages of 21 and 34.

In every case the habits of life were good as regards temperance.

In five cases (Nos 1, 2, 7, 8, 11) the patients led sedentary lives working all day in offices, with exercise for recreation before or after work, in another five cases (Nos 3, 5, 6, 9, 10) the patients had to stand about all day at their work in hot and confined places, and were too tired for outdoor exercise, as a rule, when the day's work was done, and in two cases (Nos 4, 12) the patients led an active outdoor life. The length of residence in the tropics varied from $3\frac{1}{2}$ months to 27 years, in six cases (Nos 1, 2, 4, 8, 11, 12) it exceeded four years, in four cases (Nos 3, 5, 6, 9) there was less than one year of tropical residence, and of these four patients, three were Europeans from Smyrna in Asia Minor.

There was a history of undoubted antecedent malarial poisoning in three cases (Nos 4, 11, 12).

and of possible poisoning in another (No 6) The buboes were preceded by fever in three cases (Nos 8, 9, 10), fever was observed after the buboes had arisen in seven cases (Nos 2, 3, 4, 5, 6, 11, 12), and though no rise of temperature was recorded in the remaining two cases (Nos 1, 7) it does not follow that a slight degree of fever did not exist.

Quinine was given in six cases (Nos 3, 6, 8, 9, 10, 11), to combat the fever on the supposition that these might be cases of so-called "malarial bubo." A great deal has hitherto been unfairly laid at the door of malaria, the existence of "malarial nitis" and the "malarial origin of hydrocele" have been solemnly asserted, but recent research on the nature of the malarial parasite has done much to limit the claims of malaria as an aetiological factor of disease. In none of these cases where quinine was tried, was it found of the smallest value, even in case (No 11) where a history of undoubted antecedent malarial poisoning was present. One case (No 8) lost his fever on going to sea, only to find it return on his arrival again in Calcutta, it is impossible to explain this clearly until we know how a change to sea acts on an organism suffering from fevers. We know for a fact that a sea voyage is almost a specific against malarial poisoning, and acts prejudicially in cases of enteric fever.

One thing will be noticed that in every one of these cases where fever existed, operation was followed by a fall of temperature, and in no case did fever recur. This fact alone is sufficient evidence for dismissing all ideas of any connection existing between these cases and malaria.

In every case these patients were more or less run down in health owing to hard work or residence in the tropics, and to some extent they were all anæmic. It will also be seen that with two exceptions (Nos 4, 11) all these cases occurred in the hot weather or rainy season, when the climate exercises its most enervating influence.

Dr Leonard Rogers has shown that, at the end of the rains, the blood of Europeans contains 10% less hæmoglobin than at the end of the cold season. He has also shown that tropical anæmia is associated with a diminution in the number of red corpuscles in the blood, a lowering of the amount of hæmoglobin, an increase in the number of lymphocytes, and a decrease in number of the polymuclear leucocytes.

In case (No 12) the red corpuscles were lessened, and owing to the glandular suppuration there was a moderate leucocytosis.

There was a history of a long walk or ride or of a strain or blow while riding in four cases (Nos 1, 6, 11, 12) and such injuries might certainly have produced local minor resistence. In five cases (Nos 5, 6, 7, 8, 10) there were some minor cutaneous lesions observed, such as "prickly heat" or "pimples" or "flea and mosquito bites," and it is quite possible that these might

have been the path of entrance for the micro organisms of suppuration. In case (No 2) there had been a history of chronic granular inflammation of the prostatic urethral mucosa, but before the bubo appeared this had been to all intents and purposes cured, and it is interesting to note that in this case the glands after removal were found not to have suppurated. In case (No 3) there had been some "Dhobi's itch" on the scrotum and thighs some time prior to the appearance of the buboes. In cases (Nos 4, 9) no probable exciting cause of any kind could be found.

In the two cases (Nos 6, 8) where cultures were taken after cross-section of the glands removed by operation, the microbial growths were similar, *i.e.*, mixed staphylococci.

A few words must be said as to the supposed connection between these cases and plague.

Those who have once encountered true plague, as it has been seen here in Calcutta, in all its horrible reality, will never mistake it for climatic bubo, their respective mortality for one thing being as 90% to nil, and the clinical picture being absolutely distinct. There is no doubt, however, that many cases of bubo with fever have been diagnosed as true plague and segregated accordingly.

The case is different with regard to *pestis minor vel ambulans*, the existence and true nature of which have been and are still a bone of some contention. In 1896, Cobb and Simpson published a paper giving a history of *Pestis minor* from the time of Sydenham (1665), including a very good description of the Astrakhan epidemic in 1877. They also recorded five cases they had seen in and near Calcutta where cultures taken from the blood showed the presence of a diplobacterium. However, until their observations are bacteriologically corroborated by others, one is inclined to agree with Schenbe who thinks it questionable if the cases described as *Pestis minor* are in any way connected with true plague, and considers that from the similarity of the symptoms they are more likely to be identical with climatic buboes.

In conclusion, I think we have in climatic bubo an adenitis occurring in persons debilitated by tropical influences, and so far only the term climatic, as indicating the predisposing cause, is appropriate. But there is no doubt in my mind that the exciting cause is the entrance of the ordinary microbes of suppuration into the lymphatic system, most often through trifling lesions of the skin, and when once inside the body they are able to work their own sweet will uninterfered with by the leucocytes, who in a vigorous healthy organism would soon show these intruders short shift.

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THE RECENT OUTBREAK OF MAHAMARI (PLAGUE) IN GARHWAL *

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MAJOR I M S,

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THE following is a detailed report of an enquiry made by me into an outbreak of mahamari in Garhwal, together with a history of the disease in former epidemics, and an account of the bacteriological investigations carried out by Mr E H Hankin, Bacteriologist to the Government, and myself with cultures obtained by me from cases that occurred in the course of an outbreak at the village Buirasi, patti Chaprakot, pargana Chandpur, district Garhwal, in January 1902

On December 26th, 1901, I received telegraphic instructions from the Government of India, through the Government, North-Western Provinces and Oudh, to hold myself in readiness to proceed to Garhwal to investigate and report on an outbreak of mahamari which had been continuing in certain patti north of Pauri since October, and on 28th December 1901, I received orders to proceed to Garhwal and report on this outbreak and, if possible, to take cultures from cases for the purposes of bacteriological examination. For some years endeavours had been made to observe cases and get cultures, but, in spite of many attempts to do so, no one had up to this time been successful in obtaining

cultures of hill plague. The British Plague Commission were much interested in this form of the disease, and in a letter No 990, dated 31st March 1899, the Secretary of the Commission deputed two officers, Lieutenants H J Walton and S R Douglas, I M S, to tour about the hills, make a census of the mahamari-infected districts, and endeavour to secure cultures for bacteriological examination, in order that it might be settled once and for all what the exact nature of the disease was, and whether it was true plague or not. They were unfortunate, no cases of mahamari occurring that year, nor did any cases occur either in Garhwal or Kumaun between April 1897 and October 1901 (present outbreak), and, moreover, the period April to July during which these officers were in Kumaun was not a time when the disease was likely to occur.

The home of hill plague appears to be the southern slopes of the Himalayas, it is almost entirely confined to that part of the Himalayan region comprised in the hill districts of Kumaun and British Garhwal. Elsewhere it has not been noticed: the Kashmir mountains, the Pamir region, as also Tibet, Nepal, Sikkim, and the hills beyond Darjeeling are all free of the disease. The area where this disease prevails is therefore little more than 11,000 square miles with a population of a million persons, with an average of 72 persons to the square mile, who inhabit scattered villages situated on the mountain sides at an elevation of 3,000 to 12,000 feet above sea level.

The surroundings where this fell disease prevails are picturesque in the extreme. Ranges of mountains, overtopped by the snows of the higher Himalayas, give a background to a picture that nature could hardly improve on.

The slopes of these hills are well wooded with pine trees, and scattered about are prettily situated villages with white and red houses dotted here and there among the trees. Each row of houses has a terraced front, and from this frontage down to the mountain stream that runs at the bottom of the hill, terrace upon terrace, tier upon tier, are the fields carefully banked up and laboriously constructed. But when one approaches the villages and houses, one learns the extreme filth these people live in. They are quite indifferent to it, and do not wish for anything better. They have enough to eat—famine rarely visits them,—a roof to shelter them, and the finest air and water nature can provide. They are quiet, contented, and happy. It is only when disease in the form of plague visits them that they are disturbed in the even tenour of their way, and then a very great fear possesses them so that they voluntarily abandon their houses and live in the jungle.

The Garhwali, especially the lower castes, are indescribably filthy in their habits. The better class wash at the change of the moon once a month, but the Doms probably never wash. The rigorous climate does not conduce to personal cleanliness. A typical Garhwal village consists of 12 to 24 houses perched on the side of a steep hill, they are all stone built, with slate, stone, or chappar roofs, and many are double storeyed. In days gone by the cattle inhabited the lower storey and the family the upper, but cattle are not allowed in the houses, and since the issue of the mahamari rules are placed in goshalas 50 yards away from houses the rooms are 8 to 10 feet square, and the roof so low that it is impossible to stand upright in any part. There are no apertures for ventilation except by the door and an occasional window, and these are all closed up as soon as the sun sets. In the rooms are generally stores of grain and implements of all sorts, while the house itself

* [Being extracts from a Report to the Government of the United Provinces. We have been obliged to omit the portions dealing with the previous history of the disease in Garhwal confining the paper to the description of the recent outbreak.—ED, J M G.]

is surrounded by high hemp plants, which obstruct the light and impede free ventilation of air. The general surroundings of the village are indescribably foul, and the precincts being usually one large latrine. The men all wear a woollen blanket and a cloth, the women merely a skirt and bodice. Their food consists of *chapa* made of the coarser grains, with some chillies, salt and vegetables. They rarely indulge in such luxuries as milk, *ghí*, or sugar. The disease appears to be confined to the hemp growing parganas (*bhangesun*).

The extraordinary regularity and frequency with which the outbreaks occur every few years, with a period of total cessation between, and the fact of the outbreak being always limited in extent, leads one to believe that there must be some local causation for the outbreak, and that the bacillus must have some dwelling place in the interim. Although the people are extremely filthy, this of itself, as Dr Pearson and Sir H Ramsay astutely remarked in 1852, is not sufficient to re-start the disease. Its recrudescence in sporadic form from time to time points to the fact that there must be a medium for the specific germ, and that when a certain something is added, very possibly a re-incubation in the body of a rat, a re-vivifying occurs, and the germ again becomes active and the disease breaks out, at first sporadically, and then as an epidemic. All outbreaks have been extremely fatal 95 or 96 per cent perishing of the scourge. As stated elsewhere, it is the habit of these hill people in cases of cholera and plague to bury adults of both sexes for a period of six months and to then exhume the remains and, in accordance with the Shastras, burn these and perform the *kirya karam*. Children of both sexes who are unmarried, and male children who have not been invested with the sacred thread (*janeu*), are under all circumstances buried, and their remains never exhumed. These people think that the smoke from the funeral pyre is infectious by inhalation. The custom is therefore to bury, as above stated, for six months in moist earth, and then exhume and burn in the orthodox manner. When the body has been placed in moist earth, it remains undecomposed for a long time, and I am thoroughly of the opinion, which I have expressed to the Deputy Commissioner, that the exhumation is attended with serious danger, in that the bacillus, either in the remains or in the earth, finds a chance of escape and can be conveyed to a distance either by men or animals, and by its passage through the body of a rat becomes wide spread and active. The danger being fully explained to the villagers of Buransí, they expressed their willingness to fall in with our suggestions and refrain from unearthing the remains, and to content themselves with building a fire over the grave and look upon it as equivalent to the ordinary *gathi*. In addition, they have with apparent willingness accepted my assurance that the disease is not spread by smoke, and have agreed in future when an adult dies to burn the body then and there. It remains to be seen if they will be as good as their word. This and other matters are embodied in the new *mahamari* rules (1902) I have drawn up and submitted to Government through the Commissioner of Kumaun.

Outbreak of plague at Buransí.—As regards the present outbreak, as soon as information was received on November 22nd from the *patwari* at Buransí by the Deputy Commissioner, Garhwal, Assistant Surgeon Gobind Narain Das at Srinagar was telegraphed for and sent direct to Buransí to enquire and report as to the suspected cases. Buransí village has an elevation of 4,300 feet above sea level and is situated in the Bahi Chaprakot *patti*, Chandpur *pargana*, 22 miles north west of Pauri. The village is perched on the side of a steep hill, with a stream running at the foot of the hill. There are some 70 houses and 400 inhabitants, which consist of Rajputs, Brahmins (Biths), and Doms. The Dom settlement, where the disease first broke out, is apart from the rest of the village. Bahi Chaprakot has an unenviable reputation for *mahamari* and has had frequent outbreaks, the last being in the spring of 1894, when the village Gadoli was attacked, 7 persons dying in two

households. On arrival of the Assistant Surgeon on the 25th, the facts were elicited that on or about October 12th Birkhu's son, a young boy, fell ill of fever and after three or four days' illness died on the 17th. He had been working at Bharsar tea garden. The next day, October 18th, the mother of this boy (Birkhu's wife), died. She also had had a few days' fever. There was then apparently a lull till November 7th, when Nathulia's son, a boy of 7, died after suffering from pain and swellings in the neck and fever. This is the first mention of swellings. On November 17th after two days' illness, the son of Bhuria died, aged 13. He also had fever and swelling in the neck. He had been working in the Bharsar garden. On 19th November the fifth death occurred—Saduli, a Dom girl, aged 10, who also had pain, fever, and swellings in the neck. Her father was a workman in the Bharsargarden. On November 20th Saduli's mother, aged 35, died of the same disease after three days' illness. Her husband worked in the Bharsar garden. The seventh and last case of this preliminary outbreak at Buransí, a girl of Khim Singh's, aged 8, fell ill on the 22nd November and died on 28th. Her brother worked in the Bharsar garden. This case was seen by the Assistant Surgeon, who examined it and found enlarged parotid glands and all symptoms of hill plague. All these cases except the last were among the low caste Doms who live in the Domana apart from the rest of the village. On the evening of the 25th November the Assistant Surgeon received a report from the *patwari* that in Duleth village, a mile from Buransí, Aitwaru, Dom's son, aged 6, had died that morning, and that the daughter aged 12 was sick. This village was visited next morning, and the girl was found to have a temperature of 104°6, pulse 130, eyes bloodshot and red with severe headache and fullness in the protoid region. The father said his son had had similar symptoms, with swellings in the throat, and had died after two days' illness. Both cases were diagnosed as plague. The village of Duleth is situated on the side of a steep mountain, one mile from Buransí and is a collection of 27 houses, more or less scattered and of the same pattern and class as those of the hill villages. Evidence of connection between Buransí and Duleth was clearly established, as Aitwaru had been over to Buransí for the Diwali on 14th November, and had had food there, eating and concerting with the Doms. The Dom Aitwaru as the Doms do, lived apart, but it is noteworthy that, on the occurrence of the death of Aitwaru's son the Doms, suspecting plague, immediately of themselves left their huts and went to the jungle, where the Assistant Surgeon found them. Aitwaru, with his sick daughter, was found in a hut a long way off from the rest of the Doms, who said she was suffering from *mahamari*. Aitwaru said that with the help of his wife he had buried his son in a *khad* and had come there with his sick daughter, who died that night and was buried near the first child. The hut and everything was burnt and the parent segregated.

Besides these cases, one man, Mishal, a Dom, had died on 17th at Kaproli, a village seven miles away from Buransí. He, however, had been visiting a sick friend at Buransí. Two points are noticeable here (1) that all the cases belong to the Doms, (2) that most of the cases had connection some way with the Bharsar tea garden. These ten cases complete the first outbreak, and no more cases occurred in these parts till December 22nd.

Origin of the outbreak.—There is much difficulty in elucidating actual facts as to the origin of the outbreak. The first point that attracted attention was the fact that at Buransí many of the inhabitants and parents of the first cases worked at the Bharsar tea garden. Though called a garden, it was in reality not so, as there were no tea plants or fruit trees there, it was only being cleared for the purpose of a garden. The fact that people worked there was found on enquiry not to be a matter of much importance as applied solely to the case of Buransí, as the circumstance was common to all the country side, the surrounding villages all supplying coolies for

work at Bharsar, many villages that supplied men being much closer to Bharsar than Buransi, and all the inhabitants of these villages around remained perfectly healthy and had no illness. There were 16 men living in out houses on the hillside on the Bharsar garden, they were all healthy.

On enquiry at Bharsar itself it was found that this place was merely the side of a mountain, which was, as stated, being cleared for a fruit and tea garden. There were living there a Eurasian and his son, named MacMullen. These two men had left Sialkote in the middle of August, and at the time there was no plague at Sialkote. From Sialkote they went to Amritsar, where they stopped four days, going on to Saharanpur, where they stayed two days. There was no plague at either of these places. From Saharanpur they went on to Kotdwara, the terminus of the railway, and then marched slowly on foot to Pauri (five marches), arriving there end of August. They stayed a night in Pauri and went over to the Mission at Chopra, four miles off, where they stayed one week, going on then to Bharsar, 20 miles distant from Chopra, where they stayed one night only, going on to Masseti tea garden, eight miles further north. At Masseti they stayed three days, then came back to Bharsar, staying a week together there. The father then returned to Sialkote and left the son at Bharsar. Coolies were first engaged during middle of September from thirteen surrounding villages to work at Bharsar. On November 22nd, when the outbreak at Buransi was enquired into, it was found that 156 coolies from 31 villages had been working at Bharsar for some weeks, and it was feared that the Buransi men might have infected others, but the men were all inspected, and it was found that no other man working in Bharsar was ill, and that no other village supplying men to Bharsar was affected with any illness whatever, except Duleth and Ira villages that were infected direct from Buransi. Sixteen men living at Bharsar were all healthy. They lived in houses on the hillside, working daily on the place. As I remarked above, the people first affected were Buransi people, and only Buransi people. From October 12th to November 22nd seven cases of *mahamari* occurred at Buransi. No other cases occurred anywhere else, yet the Buransi men were mixing all this time with men from 31 other villages who worked at Bharsar. The Buransi men who were at Bharsar were not attacked, but the women and children who stayed together at home in the village were affected. The Buransi coolies that worked at Bharsar had no special connection with the MacMullens. They did the same work as the other coolies in clearing the land. Some few made baskets out of bamboo cut in the jungle.

One man of Buransi, Juma, worked as cook for the MacMullens, but he did not begin this work till October 22nd, and then two deaths from *mahamari* had occurred (on 17th and 18th) at Buransi. This man went to his house daily till November 22nd, when all intercourse was stopped with the village. No Buransi coolies went into any houses, and no coolies lived at the place until the outbreak began, when the 16 men above mentioned were permanently lodged there. All the coolies working at Bharsar took their midday food there, this they brought with them each day. Saraji village supplied most coolies in September, Buransi supplied most in October, these are much the largest villages in the neighbourhood.

The MacMullens' food and milk came from Suknyana three miles off. No rats had died at Bharsar, nor were any seen about the place.

The MacMullens were two of many people who came from the Punjab to Garhwal, and it would, indeed, be a strange combination of circumstances that would result in their introducing plague to a well known *mahamari* district, a secluded spot 75 miles distant in the hills and some hundreds of miles, from their original starting place, Sialkote, where there was no plague at the time of their departure. They had brought no servants, no horse, only one box of clothes between them, which they

daily opened. They brought no food with them from Sialkote, they had mixed daily for three weeks before arrival at their destination with all sorts of people, they had marched slowly on foot, halting at night, along the main road to Pauri, and no infected person was discovered anywhere *en route*. They stayed at Pauri itself and at the European Mission at Chopra a full week, and while there they had their clothes washed, they had no *dhobi*, and did not wash any clothes at Bharsar. Their date of arrival at Bharsar was five weeks before the first case at Buransi. Moreover, later experience showed—that Dr Planck had previously pointed out in 1876—that, when *mahamari* shows itself in one *patti*, other *pattis* a long way off and having no possible connection with any early infected district show cases of the disease. In this case Kundai, *patti* Pindarpur, pargana Badhan, 60 miles east of Buransi, had 10 deaths (of pneumonic plague) in a family of 15 Doms in the middle of December 1901. No rats were found to have died in this village, but the disease was unquestionably pneumonic plague, and the deaths all occurred within ten days in the same family. All the people left the village and camped outside. At Kunet, 22 miles east of Buransi, in another valley and quite isolated, two cases of bubonic plague occurred on 3rd and 5th February 1902. Early in March three cases of plague occurred at Salaun, *patti* Dhajhuli, and some cases of bubonic disease appeared later at Tarpali near Salaun. Mr McNair, the Deputy Commissioner, myself, and the whole staff, after enquiries of an exhaustive nature on the spot, came to the conclusion that the evidence of the endemic character of the outbreak at Buransi was overwhelming and admitted of no other possible explanation. The district around and all the region about Kainur, viz., *pattis* Kundai Syun, Chaprakote and Dhajhula, is so notorious as the home of *mahamari*, and outbreaks so frequent, that the inhabitants recognise the disease at the very first occurrence of a case. There is an idea prevalent in the hills that *mahamari* is connected with the excavation of earth or old houses, buildings, &c. At Bharsar a portion of a hill was being cut away for the foundation of a bungalow, but the earth had apparently never before been removed here, and there were no houses or ruins anywhere near. At Buransi, on the contrary, a new house was being built in the Doms' quarter where the disease broke out, and materials were obtained for this house from some old houses close by. Excavations had been made and work was in progress till the disease broke out, when it was at once abandoned. Strange to say, the people themselves connect the building of this house in some way with the outbreak of the disease, and, when questioned about it, they were exceedingly reserved in their answers and facts were with difficulty elicited. This leads one naturally to ask, What is the history of Buransi? Had *mahamari* ever occurred there before or not? As far as our enquiries went, it appears that *mahamari* visited Chaprakote *patti* eight years ago (Gadholi, 1894) and Buransi thirty years ago and not since then, and that in 1894 8 deaths occurred at Ira, eight miles away in another *patti* (Dhajhuli) Chandpur pargana, in which Buransi, Ira, and Duleth are, has had many outbreaks of *mahamari*.

The history as to dead rats having been found is contradictory. Some say that dead rats were found in the village just before the outbreak, others deny it. The *patwari* informed me that some dead rats were found in October, so that it may be taken as extremely probable that some dead rats were observed. In mid winter rats are not to be seen about much in the hills, and, although rats infected with plague often leave their holes, many may have died in them and in the houses. The exact origin of this outbreak of *mahamari* is therefore problematical, but it is at present certainly confined to the limited area of Bahi Chaprakote, and is unquestionably what is known as *mahamari* or hill plague. (Later isolated outbreaks occurred in pargana Badhan, 50 miles east of Buransi, and elsewhere.) I

believe it to have originated in Buransi among the Doms, and is possibly connected with the excavations and removal of earth above mentioned.

This brings us down to the period of the second outbreak or recrudescence of the *mahamari* in Buransi and neighbourhood. The last death at Buransi was on November 28th, and no fresh case occurred here till December 22nd, but two cases occurred at Talla Ira, 8 miles from Buransi, on 15th and 16th December. It will be remembered that Mishal, a Dom, who had visited a sick friend at Buransi died at Kaproli, no doubt of *mahamari*, on November 17th. On his way from Buransi to Kaproli, he went to a marriage festival at Ira, three days before he died. This fact was known to the Deputy Commissioner, who in consequence had Ira and neighbouring villages watched. On the 15th December, or 31 days after Mishal's visit to Ira, the two cases above mentioned occurred, both children, girls aged 10 and 13, who died with fever and enlarged glands after three days' illness. No more cases occurred here.

The next case which occurred at Buransi (recrudescence) was that of Rukhnia daughter of Motim, aged 14, who fell ill on 22nd December (24 days since last case) of pain, fever, and swelling in the neck, and died next day. Thereafter, up to January 31st, 24 cases occurred in Buransi, and up to the end of the epidemic there have been in all 31 cases at Buransi and 30 deaths.

On my arrival at Pauri on 9th January, I was informed that a lull had occurred, and no persons were at present suffering from the disease, but, in consequence of information from the Deputy Commissioner, Mr A. W. McNair, that on the 9th four cases had fever, I marched on the 10th to Sakynara, 22 miles from Pauri, where I arrived the evening of that day. On my arrival at Buransi four cases were ill, two of which, No 18 Lalu, boy aged 10, and No 16, Dhugi, girl aged 14, both children of Birma, died on the night of the 10th. Their history left no doubt that they had been suffering from bubonic disease and, on examination of the dead bodies in both cases, the parotid glands were much enlarged, and the surrounding parts subject to oedematous swelling. At first I was not allowed to touch the bodies, but later they gave me permission to examine the body of the boy and incise the enlarged gland of the girl Dhugi. A partial *post mortem* examination was made of the boy, and the abdominal and thoracic cavities opened. Cultures and smears from the parotid glands and liver were obtained. Both pleural cavities of the boy were filled with exudation, and a large amount of fluid was present in the abdominal cavity. Both liver and spleen were enlarged. There was considerable rigidity of the body (a strong frost was on), and considerable lividity on both bodies, but no ecchymoses were noticeable. There was marked adenitis of all the external lymphatic glands in both cases, and it was evident the whole lymphatic system was implicated. Both parotids of the boy were enlarged and the left parotid of the girl.

On examination of the living cases I found them suffering from high fever, precordial pain, depression, injected conjunctiva, and intense prostration. In each case the glands affected as buboes were the cervical and the parotids. On the night of the 10th cases Nos 16 and 18 died. The living cases Nos 14 and 17, when seen by me on the morning of 11th, were evidently sinking. Both cases were typical cases of bubonic plague as seen in the plains of India and elsewhere. Sambhi, a woman, No 14, aged 50 had a temperature of 103.6, and was in a typhoid state. She could with difficulty be made to understand anything said to her, but complained greatly of the pain in the cervical region. She had the typical facies of a plague patient—pale, anxious, haggard, sunken, and bloodshot eyes, pupils dilated, and complained of great thirst and severe headache. Her tongue was swollen, dry, and reddish at the edges. She died on 11th, and I was only with difficulty allowed to incise a slightly swollen cervical gland, from which cultures were

obtained. No 17, Ausani daughter of Doulati, aged 5, was in a similar condition, and had a large bubo of the right parotid region. She died on the 12th. As stated, from the three first mentioned cases, cultures and smears were secured, and from the first two cases a bacillus, similar morphologically in every respect to *B. pestis*, was eventually obtained in pure culture. The fifth case I saw was No 19, a girl, it was a typical bubonic case.

The symptoms as described by Dr Pearson in 1852 coincide exactly with what I saw in the outbreak at Buransi in 1902. They are not of course all present in every case, but the most marked are chilliness, giddiness, always unusually severe headache, trembling of the limbs, inability to maintain the erect posture, great prostration, high fever, continued thirst, characteristic tongue furrowed, then becoming red and dry at the edges, eyes heavy and bloodshot, rapid breathing, small frequent pulse, frequently nausea and vomiting, purging, clammy perspiration, heat burning and pain in the precordia and occasional yellowness of skin, wandering delirium, great disturbance of nervous centres, buboes, and implication of the general lymphatic system. No pneumonic cases were observed, but there had been cases evidently of the septicemic type. In all these, and in the previous 21 cases that had occurred in Buransi, the history in each instance was identical. They became ill with fever, complained of headache, pain, and thirst, had high temperature throughout the illness. In all cases the nervous system was manifestly involved, as in all septicemic diseases. It was noticed in some cases in Buransi that the gland which constituted the bubo did not become prominent till just before death, but this has been commonly met with in plague. Children, especially girls, and their mothers, were attacked at Buransi, the men escaped, probably owing to their out of door life in the fields, the children mixing more about the village and the houses and while out in parties gathering wood or grass.

Mahamari seems to be more fatal in the bubonic form than the plains variety of plague. The pneumonic and septicemic forms are probably, as elsewhere, nearly always fatal, but the bubonic form of *mahamari* carries off over 90 per cent of the affected, which is a higher mortality than is experienced generally in India. Dr Renny in 1850 remarks on the very high mortality. For instance, in the village of Sarkote, in 1846, there were 65 people, 45 took plague, only two recovering and 20 escaped infection. In one case, where there were 16 people, 14 took plague, all dying. In Bagwan Chapiakote, in 1882, out of 20 cases 19 died with buboes in neck and armpits. As before remarked, in Buransi this year, where nearly all the cases were of the bubonic form, out of 31 cases 30 died and, including other villages, out of 34 cases 33 died. So fatal, indeed, is the disease that the experienced officer will wisely consider all deaths and cases of illness occurring in an affected community at the time as *mahamari*, unless strong proof to the contrary exists. Indeed, after an experience of plague lasting over some years, I have always inclined to this view as the wisest one to adopt when plague is prevalent.

In concluding this report, my thanks are due to Mr R. E. Hamblin, C.S., Commissioner of Kumaun, for his assistance, and to Mr A. W. McNair, C.S., the Deputy Commissioner of Garhwal, who accompanied me and assisted me in every way in a work that was not congenial

and at the time of the year when the rigour of the climate, the frost, and the snow made camping in such latitudes anything but agreeable. To Mr. E. H. Hankin, the Chemical Examiner to the Government, my acknowledgments are also due for his kindness in placing his laboratory and appliances at my disposal for the bacteriological investigation.

BACTERIOLOGICAL EXPERIMENTS

As elsewhere detailed, I arrived on January 11th at Buransai, and I examined on the 12th morning the dead bodies of a boy and girl, both children of Birma, who had died during the night of 11th. The boy Lalu, the son of Birma, aged 10 years, had an enlarged left parotid gland. A partial *post mortem* examination was allowed, and from the liver and parotid gland smears and cultures were obtained. The tubes from this case were labelled (18), as this was the number assigned to the case in the second outbreak at Buransai. The agar tubes, inoculated from the liver by means of a sterilized pipette, were found eventually to be very satisfactory, as pure growth along the whole track of the inoculated blood was found on the surface of the agar. The tubes inoculated from the parotid gland also showed growth, but there were some contaminations of skin bacilli (*staphylococci* and *streptococci*), but *Bacillus pestis* was also isolated from parotid gland tubes in this case.

The other case was that of Dhagi, aged 14, daughter of Birma, who also had died on the night of the 11th January. It was only with difficulty and by dint of persuasion that I was eventually allowed to cut into the parotid gland and take smears and inoculate agar tubes. The case is numbered (16) in the list of cases that occurred in the second outbreak at Buransai. The smears showed bacilli, and the tubes eventually gave growth of *B. pestis*.

The third case from which specimens were taken was a woman aged 50, named Sambi, mother of Kakona who had a high temperature throughout her illness but not any typical bubo. She had pain in the cervical region. I was only allowed to incise the cervical glands, and the specimens obtained were not satisfactory. The smears showed bacilli, but the agar tubes gave growths of ordinary skin bacilli, only one tube remaining sterile. The smears examined at Buransai showed the bacilli in large numbers, and the appearances were identical with those of *B. pestis*. On treating smears with half per cent of acetic acid and staining with carbol fuchsin, the typical so called bipolar staining was observed. Therefore in all three cases the smears showed the bacilli, and the tubes taken at Buransai in each case except the last showed growths which in appearance were similar to growths of *B. pestis*, being of the so called ground glass appearance. The growths on agar were by no means vigorous as the temperature so far north and at such an altitude was constantly low and incubation was with difficulty carried on in an empty biscuit box in front of a fire. The growths were found not to be sticky as is usual with plague growths, but later on when grown in an incubator at 37°C, they presented the usual sticky appearance. It appears, then, that the plague microbe grown slowly in the cold does not show stickiness. Microscopically the pure agar growths showed a coccoid bacillus, the form being more coccoid than bacillary. On arrival at Agra on February 7th, with the permission of Mr. Hankin, Bacteriologist to this Government, I started work on the cultures, which were then nearly one month old. I had, however, previously sent some tubes to Mr. Hankin, and he had set to work with the bacillus. His experiments were made chiefly with the cultures obtained from the boy Lalu (No. 18), while my observations were made with those obtained from the girl Dhagi (No. 16).

Experiment I—A considerable quantity of the growth was inoculated on to salt agar (agar with 2 per cent salt) from both the original culture tube and from a sub-culture. In both cases the tubes were placed for 24 hours in incubator 37°C. Naked eye appearance showed that the original planted mass had not increased much in size, and on microscopical examination typical involution forms were observed. Many experiments have now been made with various bacilli, and it has been found that *B. pestis* alone forms involution forms on salt agar. Had there been a growth on salt agar, the bacillus would not have been *B. pestis*. The bacillus having been isolated in pure culture, agar tubes were inoculated and sealed up for transmission to European bacteriologists.

Experiment II—Two flasks of peptone bouillon with particles of *ghi* floating on the surface were inoculated with involution forms of the bacillus. One flask (a) was placed in incubator at 37°C, another flask (b) was grown in the cold (about 18°C). Two similar flasks were inoculated with bacillus culture from ordinary agar, and one (c) placed in incubator, the other (d) grown in cold.

The two flasks (a) and (c) that were placed in the incubator showed typical stalactite growths after 48 hours and abundant long stalactites after 60 hours. The flasks (b) and (d) grown in the cold showed stalactite growths only after many days. The *B. pestis* is the only known bacillus that forms stalactites when grown in *ghi* bouillon. The stalactites are long and dependent from the under surfaces of the particles of *ghi*, and on shaking the flask the growth falls down in the form of a cloud. The flask contains much sediment, and after a few days the stalactites again form.

Experiment III—Four rats were inoculated with pure 24 hours agar cultures. Two of the rats became slightly ill, but did not succumb to the disease. This unexpected result in a bacillus that macroscopically and microscopically corresponded to *B. pestis* and up to this conformed bacteriologically in all details to *B. pestis* was in the nature of a surprise. Mr. Hankin inoculated a great many rats, but with negative results. With a view to elucidating the peculiarity above mentioned, cultures were sent to Monsieur Haffkine, Plague Research Laboratory, Bombay, and his report is attached.

J CHAYTOR WHITE, MAJOR, I M S, M D, C M,
D P H (C A M B),

Deputy Sanitary Commissioner, 1st Circle,
United Provinces of Agra and Oudh.

No. $\frac{187}{B-4}$, dated Agra, the 7th March 1902

From—E. H. HANKIN, Esq., M A, Chemical Examiner
and Bacteriologist, N W Provinces and Oudh and
Central Provinces

To—Sanitary Commissioner, N W Provinces and
Oudh

SIR,—In reply to your No. $\frac{458}{P}$, dated the 20th Febru-

ary 1902 I have the honour to state that the two cultures of alleged Garhwal plague sent me by you have the ordinary characters of attenuated *Bacillus pestis*. They resemble the cultures that I isolated from men, rats, and monkeys towards the end of the Jawalapur outbreak. They produce involution forms on salt agar and stalactite growth in butter broth in the manner typical of plague. The adhesive character of the growth is distinctly less than with ordinary Bombay plague, and is only shown in cultures kept in the incubator. In this respect the cultures resemble the plague above mentioned from Jawalapur. As shown by numerous experiments, the cultures were not virulent to rats when inoculated in small doses.

2 The gland smears submitted to me were typical of plague in appearance on microscopic examination.

No 729, dated the 3rd April 1902

From—W M HARRISON, Esq, CIE, Director in
Chief, Plague Research Laboratory, Bombay,
To—Sanitary Commissioner, United Provinces of
Agra and Oudh

Sir,—I have the honour to confirm this office deferred telegram of 25th ultimo sent to you in reply to your wire of 23rd idem, and which ran as follows —

"Yours of 10th instant Cultures Nos 16 and 18 received from Agra, 18th Typical stalactites in broth and usual plague appearance on agar obtained twentieth and subsequent days. Rather large doses of agar and broth cultures of both numbers inoculated subcutaneously, intraperitoneally, (and) intravenously in rats, guinea-pigs, (and) rabbits on twenty second. All succumbed yesterday 24th, showing bacilli in organs. Rats now being tried with minimal doses. No involution forms so far, but this feature not constant. Cultures may be pronounced plague."

2 I beg now to inform you that 24 hours agar cultures were prepared from your specimens Nos 16 and 18, and two rats infected by being scratched in the right thigh with a glass bristle brought in contact with each culture separately. Both animals succumbed, the first in five and the second in seven days, showing swollen glands in right inguinal region and plague bacilli in organs. Thus far the cultures do not differ from ordinary plague microbes

A RECURRENCE OF EPIDEMIC DROPSY IN CALCUTTA IN 1901

By LEONARD ROGERS M.D., M.R.C.P.,

CAPTAIN I.M.S.,

Offg Prof of Pathology, Medical College, Calcutta

AT the beginning of June 1901 a slight outbreak of this rare but interesting disease occurred in Calcutta, which I was enabled, through the kindness of Lieutenant-Colonel R. L. Dutt in calling my attention to it, to see a few cases of. The disease, however, very soon after subsided, and there now appears to be little likelihood of my having an early opportunity of obtaining more material for investigation, so it may be worth while to briefly put on record the few facts observed.

This disease was first described as occurring in Calcutta in the latter part of the years 1877, 1878 and 1879, breaking out each time after the rainy season was over and dying down again in the following hot weather. After an interval it appeared again in 1881, this time during the hot season. In addition to Calcutta a slight outbreak occurred in Dacca and a more extensive one in Shillong, while a large number of cases also appeared in Mauritius, all of these places having been apparently infected from Calcutta. A good summary of what is known of this disease will be found in a paper which was read by Professor Kenneth McLeod before the Epidemiological Society of London in January 1893, and published both in their proceedings and in the *Indian Medical Gazette* of 1893-94, and a shorter paper by the same author is included in Clifford Allbutt's *System of Medicine*. In order to allow of my cases being easily compared with those of the former outbreak, it will be well to mention the chief characters of the affection as described by Dr McLeod. Dropsy,

usually preceded by fever, is the essential symptom, affecting first the feet and legs, but ascending to the hips or waist and affecting the upper extremities, and occasionally also the face. It persists for long and may effect the pleura and pericardium, but very rarely the peritoneum. Remittent pyrexia, usually from 100 to 101, but sometimes reaching 104, without rigors or sweating, usually appears before or with the other symptoms. Diarrhoea and vomiting was first noticed in the Mauritius cases, but was also seen in about half the Calcutta ones, the stools being frequent and scanty. Burning or pricking of the skin or aching of the deep parts was noted, but there was no numbness or paralysis. The eruption was specially noticed in many of the Mauritius cases as a diffuse redness on the face, or as morbiliform or dark red crescentic patches, with sometimes petechiae in bad cases, affecting the trunk and limbs. There was no albumen in the urine. In severe cases dysnoea, palpitation, congestion of the lungs, rapid pulse and lividity may ensue. The liver may become enlarged secondary to the heart symptoms. The spleen is not enlarged except when malarial complications are present. The lymphatic glands are normal. Anaemia is an essential symptom of the disease, the red corpuscles being decreased and the white increased according to Lovell of Mauritius, but T. R. Lewis found nothing special in the blood in Calcutta. The duration of the disease was two to three months, the average according to Lovell being six weeks. It may be suddenly fatal on the fifth or sixth day, the mortality in Calcutta having been given as from 8 to 40 per cent, and in Mauritius as from 2 to 3 per cent. The difference may possibly be due to some of the Calcutta observers only seeing the more severe cases.

The Recent Outbreak—The recurrence of the disease in 1901 occurred during the hot weather, and appears to have been limited to a few households in the northern part of the town around Harrison Road and Cornwallis Street. Groups of cases in three houses in different streets were seen by me, while a few more were seen by the Health Officer of Calcutta at the Bethune College for Girls. The outbreak was thus a very limited one, and it appears to have subsided with the onset of the rainy season, and, as far as I can learn, did not recur during the last cold weather or during the recent hot season.

Household in Tanner's Lane—Out of 17 persons in this house no less than 14 had been attacked by the disease at the time of my visit. Shortly before the first case occurred some excavation had been going on just outside the house, which may or may not have had anything to do with the outbreak. The family was a very well-to-do Hindu one, who were intimately connected with another household in a house which was continuous with that attacked, yet none of the second household got the disease, which points to a very localised infectiousness. The father, mother and one grown-up son were first attacked simultaneously, the woman having diarrhoea and dropsy, but the other only diarrhoea with frequent scanty stools passed with some distress. Ten days later another woman, a maid servant and three children were attacked on the same day, and seven days later still the rest of the family

developed the disease. All those over 20 years of age suffered from diarrhoea, while the children had dropsy and fever. In two cases pain in the testicle with the fever was noted. The disease usually began with diarrhoea and pain all over the body, but swelling was absent in two and slight in another. One old man had much swelling which reached the abdomen, together with fever. All the children had slight oedema in the feet, and in one of them it extended up to the abdomen. All the children had slight fever, usually up to 100 in the evening and lower in the morning. All the female members of the family had fever, dropsy and rash except one old woman of 85, who had no rash, and they appear to have suffered more severely from the disease than the male members did.

Rash had occurred in nearly all the cases, being of the nature of dark purple purpuric looking spots, which tended to run together to form irregular blotches, being most marked on the legs and arms, that is, on the parts affected by the dropsy. In only one case was it noticed on the face. There was slight yellowness of the conjunctiva in a few cases. There was no rigor at the commencement of the fever, and no sweating on its defervescence except in one man after a rise to 104.8. Sickness was not a marked feature of the disease except in two of the female patients, but several of the children also suffering from it slightly. Dyspnoea was only present in the severe cases with dropsy of the abdomen. The urine had only been examined in the case of the very old female patient, and a trace of albumen and very few hyaline casts were said to have been found. The age of those attacked varied from 6 to 85 years, and the only members of the household who escaped were a boy of 8 years, and two infants of one year and ten months of age respectively, a point of interest as McLeod also states that very young children escape the disease. At the time of my visit the disease was on the wane but three of the boys showed temperatures of from 99.4 to 99.6. The above somewhat incomplete details were obtained by questioning the adult patients.

Household in Mudden Mitter Lane—This outbreak occurred in the house of a native medical practitioner, which allowed of more complete and accurate notes of the histories and progress of the cases being obtained. The outbreak began four weeks before my visit, the first case being in a servant, after which three more servants were attacked, two of whom slept in a verandah with the first patient. The first case showed slight fever, chronic diarrhoea, followed by dropsy of the extremities. A week after the servants fell ill the wife and three children of the doctor, aged from 14 to 25, were attacked, while very shortly before my visit three more children, aged 10, 12 and 19 years respectively, developed the disease. The only members of the household which had escaped up to that time were the old doctor himself, a grandchild aged 3, and an infant, again illustrating the apparent immunity of very young children, while the doctor was beginning to suffer from loose motions on the day of my visit, which appeared to be the beginning of an attack. The following brief notes of these cases will give a fair idea of the disease.

First Case in Servant—He now shows oedema of the legs up to the knees, and some anaemia. He complains of some burning sensation and muscular pain, but there is no anæsthesia, and the knee jerks are present.

Son aged 25—He first suffered from slight fever for a few days, followed by oedema, diarrhoea and rash. The oedema now reaches up to the knees, but at one time spread to the thighs, while there was also slight swelling of the nose and eyelids. He had pains all over the body and in the feet and legs and in the muscles. The rash affected the leg and arms, being first a roseola in nature and afterwards of a purplish colour. He passed three or four loose stools a day without pain. The knee jerks are normal and there is no anæsthesia. He is weak and slightly anæmic,

the hæmoglobin being 65 per cent. The spleen and liver are normal.

Son aged 17—He was attacked at about the same time as the last case, but no fever was noticed. The oedema affected the arms and the legs up to the thighs, and is still well marked in the legs, becoming less when he lies down. The rash came on after the swelling and in the dropsical parts. It now presents the character of purplish streaks in the course of the superficial veins, being most marked on the legs. He has been passing about two loose stools a day for the last three weeks, but has not suffered from sickness. The knee jerks are present, and there is no anæsthesia. The liver and spleen are normal. He is weak and slightly anæmic and has a soft pulmonary systolic hæmic murmur.

Son aged 14—His illness began twenty days ago, just before that of the eldest boy, with swelling which reached up to the thighs and affected the arms but not the eyelids. It is still well marked in the legs. Fever was not noticed. The rash appeared after the dropsy and affected the swollen parts. It is now present on the legs in the form of purplish streaks in the course of the superficial veins as in the preceding case. Diarrhoea began about the same time as the rash, two or three loose stools a day being passed without pain. There was no sickness. The knee jerks are present, and there is no anæsthesia. The spleen and liver are not enlarged. He is anæmic. The urine had a specific gravity of 1005 and was free from albumen.

The above cases had all been taken ill some time before I saw them, but the next three cases had only begun to show symptoms on the morning of my visit. *Son aged 12* showed a suspicious faint rash on the legs similar to that described in the two preceding cases, but as yet showed no oedema or fever, his temperature at noon being normal. Another son aged 10 showed slight oedema just above the ankle and a slight rash, while a sixth son aged 19 showed similar slight oedema and rash, and his temperature at noon was 99.2.

This group of cases illustrates very well the main features of the disease, and, allowing for the mildness of the present outbreak, its identity with that of 1877-79 will be evident enough.

Household in Shibnara'n Das' Lane—In this instance again the first to be attacked was a servant, who was taken ill over a month before my visit, commencing with swelling of the feet followed by diarrhoea, many stools being passed for two or three days. Two or three days after this first case appeared five out of the six persons remaining in the house were attacked at the same time, the head of the household alone escaping, but his uncle, wife, and servants were all attacked. There were no children in this house.

The most severe and interesting case was his wife, who first suffered from fever, and two days later dropsy appeared. She was sick once after taking medicine, but had no diarrhoea, and no rash was noticed. The fever had lasted about one month, while the dropsy affected the legs and arms and was well marked over the abdominal wall. The fever was at first remittent in character, ranging from 102° to 104°, but now is intermittent remains between 99° and 101°, and sometimes falls to normal in the morning. She suffered from headache and palpitation. The pulse was 120 per minute, and hæmic murmurs were present at both the apex and pulmonary areas, being most marked in the latter position. Anaemia was present, the red corpuscles numbering 3,090,000 per c m and the white 7,500, or one white to 312 red. The spleen was not enlarged, but there was slight tenderness over the hepatic area. The urine had been examined and reported as being scanty, of a dark red colour, sp gr 1020 with excess of urates, blood and hyaline casts and a trace of albumen.

The cook, a female, had suffered first from swelling of the feet with slight fever and diarrhoea, but no rash, and she still showed oedema of the feet. She was slightly anæmic. Hæmoglobin 55 per cent, red cor-

puscles 4,700,000, white 9,500, making one white to 494 red, or nearly double the normal proportion. Another female servant who was recovering from the disease showed slight anemia, her hæmoglobin being 54 per cent.

Remarks—It will be observed that most of these cases were very mild, but a few of the attacks, more especially among the women, were severe, although none were actually fatal, the total number being small. Yet every symptom described by McLeod was seen in the present outbreak, and I also agree with that writer that this disease is quite distinct from beri-beri. The presence of the knee jerks and the absence of anesthesia alone appears to be sufficient to differentiate the two, while the rapidity with which the disease spreads through a household within a week or two together with the rash and bowel symptoms support this conclusion. Perhaps of even greater diagnostic importance are the differences in the blood changes in the two diseases, for in the epidemic dropsy anemia is an essential symptom, while this is usually absent in cases of beri-beri, in a large proportion of cases of which the corpuscular richness of the blood is perfectly normal according to Manson, this having also been the case in a few cases of the disease which I have examined myself. On the other hand, anemia is a constant symptom of all but the very mildest cases of epidemic dropsy, although not of an extreme degree as a rule, as is illustrated in the few cases narrated above in which I was able to examine the blood. In contrast to the decrease of both the hæmoglobin and the red corpuscles is the increase of the white, which numbered over 10,000 in two cases and over 9,500 in another, while in a fourth there were 7,500 against 3,090,000 red, showing a relative increase of the white. In the remaining case only 4,500 were found, but this was a mild one with very slight fever. These observations agree with those of Lovell in Mauritius, and illustrate once more the identity of the present and the former outbreaks.

Bacteriology—As these cases were seen in private native houses, bacteriological examinations were attended with some difficulty, but I was able to make culture from fluid obtained by means of a hypodermic syringe from the oedematous parts in eight cases, and in one also from the blood of the median basilic vein, but with negative results, the highly resisting sporing bacillus mesentericus only being obtained in some cases, doubtless owing to contamination, the syringes having only been boiled in sterile water and not treated with heated oil, while the variety obtained was found to stand boiling for one minute. At this point further observations were stopped owing to the disease dying out.

Nevertheless the disease appears to be a specific one, for although at first sight the occurrence of so many cases in single houses might be thought to suggest some article of diet as a

possible cause of the disease, yet when we come to study the sequence of the cases, and the way in which successive groups are attacked at varying intervals, then infection seems to be the only possible explanation of the incidence of the disease, and in this connection it is of interest to note that in two out of the three houses dealt with, a servant was the first victim of the disease, by whom it was probably introduced. All the facts here recorded, then, point to epidemic dropsy being a definite specific disease of unknown origin.

FURTHER EXPERIMENTS IN CONNECTION WITH THE PATHOLOGY OF BERI-BERI

By E. R. ROST,

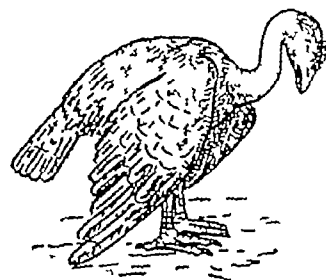
Captain, I. M. S.,

General Hospital, Rangoon.

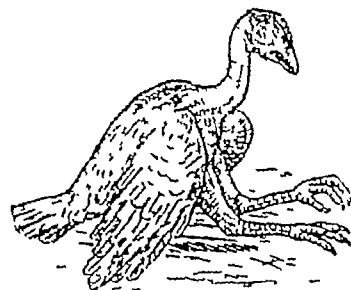
In the *Indian Medical Gazette* of July 1901 I mentioned that experiments had been carried out on fowls to show the connection between beri-beri in man and a disease in rice. I have now carried out a large number of experiments on fowls and latterly on pigeons, which are still more in support of my former contentions.

Fowls fed on fermenting rice obtained from Pegu jais in the rice-liquor shops of the town, develop a disease which is rapidly fatal.

Out of thirty fowls experimented upon in this direction not one recovered, although three, removed from the influence of the feeding, died shortly after.



Earlier stage, showing drooping wings, bare neck and stooping position



Fowl dying from beri-beri sitting on its hocks, only feathers are on its wings and tail

The symptoms were as follows—The birds rapidly became anæmic, weak, listless and fell remarkably in weight, their feathers fell out,

commencing on the neck and extending to the trunk the cocks-combs became blue. They all suffered from diarrhoea, some had slimy bloody evacuations. They fed well on the fermenting rice and never starved, until the final stage of paralysis occurred which was within two days before death.

At this stage they stood in crouched up positions supporting themselves on their backs and tails with their feet in the air, their wings spread out to balance them, on being thrown up they fell like dead weights. They became cyanosed and gasped for death. Some died very rapidly, others took about two days to die in this condition.

The *post-mortem* appearances showed hyperæmia and thickening of the gastro-intestinal tract, in some cases marked petechiæ in the small intestines. (Professor A. Holst in a number of *post-mortems* performed by him in Rangoon on beri-beri cases found thickening and petechiæ in the mucous membrane of the small intestines.)

Laterally three fowls were injected subcutaneously from the heart blood of three fowls dead of the disease produced by feeding on fermenting rice. These birds all died with the same symptoms, there was less loss of feathers, but the same great anæmia, loss of weight, and finally the paralytic stage, followed by death.

To contrast this condition with similar ones, experiments carried out from fowls dead of the disease after injection from beri-beri blood (suggested to me by Professor Holst), made it quite impossible to doubt that the two conditions were but one and the same disease.

Repetition of the experiments carried out on fowls injected intra-peritoneally from the venous blood of beri-beri patients by the pipette method showed similar symptoms as in the former experiments, the weights fell rapidly in every instance except in two in which the disease did not develop, they suffered from diarrhoea, loss of feathers, anæmia, weakness, dropping of the wings and all partook well of their food. The acute symptoms would suddenly come on, and the bird die with symptoms identical with the fermenting rice experiments. The *post-mortem* appearances showed petechiæ and hyperæmia of the small intestines.

Professor Holst was experimenting in Rangoon on the subject of beri-beri, and at his instigation we tried the effect of injecting a small amount of blood from a fowl dead of the disease into healthy fowls. Three such fowls were injected subcutaneously with a small amount of blood diluted with broth, and these have all died from the same disease.

From the blood of these, other fowls were injected subcutaneously, which developed and died from the disease and then a third series, and finally I have a fourth series now under observation.

I have lately tried the same experiments with pigeons out of six pigeons injected intra-peritoneally not one recovered. The symptoms came on suddenly from a week to three weeks after the injection, they had great loss in weight, diarrhoea and anæmia, although they partook well of their food.

They finally could not stand up or fly, became cyanosed and died, *post-mortem* petechiæ and hyperæmia of the intestines were found.

Re-injection has produced the same symptoms in another pigeon now under observation.

The latter experiments of re-injection show that the disease must be caused by a micro-organism in the blood, that the fowls fed on diseased rice die from a micro-organism in the blood which on re-injection produces the same disease, that the fowls injected from the blood of beri-beri patients die from a micro-organism in the blood, which on re-injection produces the same disease.

From the identity of the symptoms of the disease produced by fermenting rice and by injection of blood of beri-beri patients, as well as the identity of results of re-injection, can leave little doubt that the two conditions are caused by the same micro-organism.

I have noticed this disease so far back as 1898 in pigeons, at the time of an epidemic of beri-beri in the Meiktila Jail. I have noticed it in Rangoon amongst other fowls, and I am told that epidemics amongst fowls occur, the symptoms of which appear to be exactly as I have described.

I do not, however, think that the disease in fowls is the cause of the disease in man. I am quite sure in my own mind that the disease develops from drinking rice-water-liquor or by feeding on diseased rice, and local statistics and observations on the habits of the coolie classes chiefly affected by this disease entirely bear out this opinion. I would refer the reader to the article by Captain Barry in the *Indian Medical Gazette* of September 1900, in which he shows that the disease is endemic in Rangoon, and the class of man affected is the Hindu coolie, he is the rice liquor drinker. An objection to the rice-liquor origin of beri-beri has been raised on account of there having been a few cases of beri-beri amongst British troops in Rangoon and amongst Eurasians in the town. I have seen the former in the rice-liquor shops, I have extracted the truth from the latter.

This rice-water-liquor has not at all a bad taste, it tastes much like cider.

The manufacture of this drink, is always from rice which has been damaged by water in taking paddy in boats to the mills in Rangoon, such rice is not accepted at the mills and is sold off by the owners at a cheap rate to Chinamen, the Chinamen's only use for this damaged paddy can be for the manufacture of rice-water liquor and the feeding of cattle.

All the year round, there are never less than fifty cases of ber-ber under treatment in the General Hospital, Rangoon, and although these cases are scattered throughout the hospital there has not been an authentic case of infection in the hospital. Some inpatients have developed ber-ber in hospital, but these had been in the habit of absconding to the bazaar or had not been long admitted.

Moreover, we have never had a case in a child, and cases in women are comparatively rare. Yet the coolie classes live in crowded quarters, and if the disease is of an infectious nature one would expect the women and children to be as much affected by the disease. Children never drink rice-water-liquor and women rarely. I think this is sufficient to show the non-infectious nature of the disease. These are points all in favour of the rice-liquor origin of ber-ber, though I admit this is not invariably the cause. There are many instances in which even the rice theory cannot adequately explain the origin of the disease. If this disease grows in damp rice, might it not also grow between the starch granules of other cereals, and it would be difficult to exclude any kind of cereal from the causation of the disease in any place.

A CASE OF "TRUE" INTESTINAL SAND

By CHARLES H. BEDFORD, D.Sc. M.D., Edin.,

MAJOR, I.M.S.,

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Chemical Examiner to Government, Bengal.

So little is known of this condition—if we may judge from the paucity of references to the subject in contemporary medical literature—that it becomes of interest as well as importance to record any case of the kind, more especially when the report can be supplemented by a chemical analysis. Through the kindness of Lieutenant-Colonel Peck, I.M.S., of Calcutta, I have lately had the opportunity of analysing a specimen of "true" intestinal sand which was passed by a patient seen several times by him in consultation, and I am further indebted to him for furnishing me with the clinical facts of the case.

The patient is a European lady aged about forty-four, with a very marked history of gout. She has had a large number of "gouty deposits" in the smaller joints, with nodules in the ears, but the larger joints do not appear to have been affected. Several tendons have also been disabled from the same cause. Constipation was present, requiring treatment with saline purgatives. The motions were ordinarily normal in appearance, except for the presence of mucus. There was apparently no diarrhoea alternating with constipation, as is sometimes the case in such patients. There was, however, a distinct, though not severe, attack of mucous colitis coincident

with the passage of the sand. There was no history of colicky pains, vomiting or distension. "There was never any intestinal pain to speak of." "The tongue was always particularly clean." She had not reached the menopause, was sterile, and had all her life suffered from ovarian pain. A sample of her urine was analysed by me in March last and had a brown, somewhat smoky appearance with much suspended matter, specific gravity, 1020, acid reaction, much albumin present, with a few fibrinous casts and uric acid crystals. Dr. Peck mentions the fact that the albuminuria entirely disappeared some months later. "At the time the sand was passed she had for months been on milk and farinaceous diet." The treatment was by preparations of Lithium, occasional saline purgatives, and colchicum and iodide of potassium in mixture. The amount of sand passed at any one time seems to have been not more than half-a-teaspoonful (usual size). The patient left India for England in February last.

Examination—The deposit was very finely granular and yellowish-brown, and very like fine sand.

Under the Microscope—The particles were of very various shapes and sizes, oblong irregularly oval, and of various other shapes. The colour varied from black, through reddish brown to a light yellow. Many of the particles were only translucent at the edges. There was no appearance of vegetable or crystalline structure. The organic portion, washed and stained with methylene blue, showed a quantity of cocci and bacilli.

The result of *Analysis* is here given—

Moisture	5.20 per cent
Calcium Phosphates	28.68 "
Calcium Carbonate	5.20 "
Magnesium Phosphate	0.49 "
Organic Matter	60.45 "
	100.00

No traces of Uric Acid or Urates were detected.

True intestinal sand appears to yield a much higher percentage (from 25 to 70) of *inorganic* constituents than the false variety which gives only about 2 to 3 per cent generally.

The amount of sand remaining over was too small to allow of a sufficiently accurate examination to be made as to the nature of the pigment present.

The above analysis, then, clearly shows that we are dealing in this case with an example of "true" intestinal sand as distinguished from the "false" sand which owes its origin to undigested vegetable particles, occasionally coated with earthy salts. Pears, figs and bananas are apparently specially liable to produce this "false" variety, which was, I believe, first described in England by Professor Delépine at a meeting of the London Pathological Society in 1890. One of the most recent, as well as one of the best papers on the subject is one by Sir Dyce

Duckworth and Dr A E Garrod, published in the *Transactions of the London Medical and Chirurgical Society*, 1901, to which is appended a Bibliography

The case now recorded agrees with M Dieulafoy's series in having occurred in a gouty middle-aged woman (about two-thirds of the cases are women of about 35 years of age), and as regards the history of concurrent muco-colitis. The absence of painful paroxysms, vomiting and flatulence is interesting as in most recorded cases these symptoms have been marked. The albuminuria (with granular casts and uric acid) was also apparently a gouty manifestation in this case.

In the discussion which followed Duckworth and Garrod's paper (*Lancet*, 1901, p 623), Dr A Ciombie, late of Calcutta, expressed the opinion that the affection must be commoner in India than in England, and he mentioned the fact that in ten years' experience at the Presidency General Hospital, Calcutta, he had met with three cases all accompanied by severe colic which varied directly with the quantity of sand passed. It is to be regretted that there is nothing to show that these cases were examples of "true" intestinal sand, or "enteric lithiasis" as the condition has been termed, for in the "false" cases colicky pain varying directly with the amount of sand passed is also a prominent symptom, and there is no mention of any other circumstance which would guide us to a knowledge of the true nature of Dr Ciombie's cases, as there apparently was no chemico-microscopical examination made in any of them.

Bunge has pointed out that the proportion of lime present in milk even exceeds that to be found in an equal bulk of lime water. Hence in cases which have been for long on an almost exclusively milk-diet, the source of the large proportion of lime salts present in true intestinal sand is to some extent explained. The intestine is, moreover, now known to be one of the main channels for the excretion of calcium salts from the system. And the so-called "chalk-stone" deposits present in gout contain in addition to their principal constituent (sodium urate) varying proportions of the phosphates and urate of calcium. As true intestinal sand appears to be closely associated with gout and has not apparently been observed in non-gouty patients who have been placed largely on a milk-diet, one is inclined to regard the condition as allied in some manner to the tophaceous deposits in other parts. But how are we to explain the absence from the sand of uric acid and its compounds which so characterize these gouty deposits in other parts of the body? It is easy to conjecture that the inorganic constituents of the sand are derivable from the milk-diet and by excretion into the bowel from the system and that, on the other hand, uric acid and its compounds are excreted by the kidneys and to a

small extent by the skin and separate out in those tissues in which the blood-supply would appear to have a greater opportunity of depositing them than would be the case in the intestine. Sluggish action of the bowels is alleged as a cause of intestinal concretions, but this can only be a predisposing circumstance. For the milk-diet and the sluggish state of the bowels do not alone appear to be able to bring about the condition of true intestinal sand. All, then, that we can at present say is that the condition would appear to be closely related to gout and to be favoured by a milk-diet.

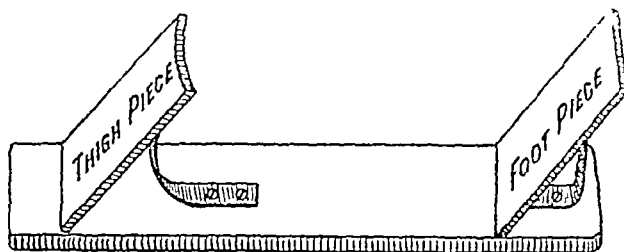
A Mirror of Hospital Practice.

A LEG SPLINT

By D M MOIR, A.M., M.D.,

Offg Surgeon Superintendent, Presidency General Hospital, Calcutta

EARLY in April, 1901, at the Medical College Hospital, Calcutta, I had occasion to excise a long strip of skin from the back of the calf of the leg, almost from the ham to the heel. Before doing this I had to consider the after-treatment, and devised a splint similar to that given in the figure, with the view of preventing the line of incision being subjected to any pressure. The result was most satisfactory.



because the long wound united by first intention. In April 1902, at the General Hospital, Calcutta, I have again resorted to the use of this splint for a "garter" operation on varix of the leg, and with equally gratifying results, because the long circular incision healed by first intention. This splint might be used with advantage for lacerated wounds of the back of the leg, in operations for varix of the short or long saphena, in certain tenotomies, &c.

Its advantages are that the patient can lie down or sit up equally well in bed without shifting the bandages and splint. The wounded leg is perfectly under control and is rendered immobile. All pressure on any part of a wound on the back of the leg is prevented. If properly applied there can be no pressure on the heel, which does not rest on the horizontal board, but is fixed to the inclined plane in such a way that the heel is an inch or two above the horizontal plank. The splint consists of one

heavy horizontal plank, to which are fixed two inclined planes, one for the thigh and the other for the sole of the foot. In taking measurements due allowance must be made for pads under the thigh and foot. The measurements will vary with the individual. In the two cases I have used it they were as follows.—The horizontal plank of teakwood 1" thick, 6" broad, and 30" and 32" long in the two cases. The thigh piece was fixed 2" from the upper end in one case and 2½" in the other, in both it was 9" long by 6" broad, in one it was 5½" high and in the other 6", and in both the upper margin was slightly hollowed or curved for the thigh to rest on. The foot-piece was fixed 6" from the lower end, 9½" long by 6" broad, and vertically 6" high. Both thigh and foot pieces were fixed in position by angle-iron and screws. The splint should be sufficiently heavy to prevent its being moved about by the leg on it, but it can easily be fixed to the bed if necessary.

It would not be difficult to elaborate this simple splint so as to fit all cases. This could be done by having adjustable thigh and foot pieces sliding in a groove, and with ratchets to vary the angle. Also a metal button might be screwed on the upper end of the foot-piece to allow of a supporting band to pass round the heel and back to the button.

LARGE HYDROCELE OF THE TUNICA VAGINALIS TESTIS, OCCUPYING THE MAJOR PART OF THE ABDOMINAL CAVITY

By J. MAITLAND, M.D.
LT. COL., I.M.S.,
General Hospital, Madras

A HINDOO telegraph signaller, aged 25, was admitted on the 16th July 1901, suffering from an abdominal tumour, as well as from enlargement of the testicles.

History—Five years previously the testicles had commenced to enlarge, and this tendency had continued ever since. A year and a half prior to admission the patient noticed a swelling in the lower part of the abdomen, and this had gradually increased in size. There had not been any pain. For four years he had been subject to periodical attacks of swelling of the left leg, unaccompanied by pain or constitutional disturbance.

Condition on admission—The general health of the patient was good. In the left side of the scrotum was an ordinary hydrocele, the size of a pear. On the right side there was also a hydrocele, about twice the size of that on the left side. It extended upwards into the inguinal canal forming part of a much larger swelling situated within the abdominal cavity. The latter tumour appeared to fill up about two-thirds of the abdominal cavity, its upper margin reaching a point midway between the

umbilicus and the ensiform cartilage. It was rounded in form, smooth, tense, and fluctuating. The sense of fluctuation was communicated to the tumour in the right side of the scrotum.

Operation—An incision was made into the scrotal portion of the sac and carried upwards through the enlarged external abdominal ring. The fluid contents of the sac, which measured over a gallon and a half, were then evacuated. Evacuation of the contents of the sac was followed by immediate and considerable contraction of its walls. Both scrotal and abdominal portions were packed with gauze, after which the hydrocele on the left side was dealt with in the ordinary way.

About three weeks after operation the patient was attacked with high fever and shivering, the temperature rising on one occasion as high as 105°. These symptoms passed away in a week's time and there was no further interruption to recovery.

Remarks—Cases of hydrocele and hæmatocele in which part of the enlarged sac pushes its way upwards into the abdominal cavity are not very uncommon, but it is seldom that the intra-abdominal portion of the sac reaches such enormous dimensions as it did in this case.

A somewhat similar case was admitted into the General Hospital a few years ago. In that instance the tumour, which was a hæmatocele and not a hydrocele, had been tapped before admission, and septic inflammation had set in. All efforts to drain the sac and to remove the septic condition failed, and the patient died from septicæmia.

A CASE OF ANTERO-POSTERIOR BULLET WOUND OF KNEE-JOINT WITHOUT OSSEOUS INJURY

By GODFREY CHARLES, B.A., M.B., B.Ch., M.R.C.S.,
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On the 14th August at 3 A.M. I was called to see a native said to have been shot by the occupant of a bungalow. I found the man lying on his back on the verandah close to where the incident had occurred, he was greatly excited but apparently not suffering much pain. He informed me he was shot in the left knee. On examination of his trowsers I found a small irregular tear just in front of the knee, but no loss of substance. On uncovering the knee I found close to the inner border of the left patella slightly below its middle an entrance wound, circular 'punched in' and surrounded by a slight greyish border. Further examination revealed in the lower third of the popliteal space an elongated somewhat 'starred' wound with everted edges, its longest diameter—about three-quarters of an inch—directed downwards and outwards and almost reaching by its outer extremity the mesial

plane of the limb. Considerable oozing was taking place from both wounds, especially the posterior more dependant one. I searched for and found the bullet of a 320 Colt's Revolver, on some matting close to where the man had been shot. Its point was quite mushroomed, and as I could not find any mark on the neighbouring wall or door, suggestive of its having struck them, it seemed to point to osseous injury. Subsequent examination of the joint did not however bear this out. No crepitation, either on pressure or movement, being detectable, slight pain being the only phenomenon produced by manipulation, neither was there any bony deformity. This together with the fact that no trousseau had been carried in made me decide against any exploration of the joint digital or otherwise. I put on a boric lint dressing, and had him removed to the Civil Hospital. On removing the dressing later in the day, I found a large amount of hæmorrhagic oozing, the lint being saturated, this was treated by elevation and gradually diminished. Next day the dressing was changed and found fairly free from blood, the wounds having closed up, the joint was however much distended with fluid. Local cold and a pouge were employed with result that the effusion gradually decreased, and in a few days disappeared. The temperature which had risen to 102° falling *pari passu* with the effusion. On the third day pain was complained of in the lower part of the popliteal space, becoming much worse on deep pressure. This pain changed its situation slowly, moving daily further down the leg till it reached the lower extremity of the calf, neither cutaneous redness nor œdema were visible. I concluded it was probably a small hæmorrhagic effusion gradually insinuating itself downwards in the inter-muscular planes of the leg and causing increase of tension. Painting with Tinct Iod and elevation were employed with good result, pain disappearing in a few days. No anæsthesia paralysis or venous distension were at any time present, and the arterial pulse in the post and anterior tibials was normal, so that apart from the probable injury of one or more articular arterial branches, no nervous or vascular damage had been sustained. Passive movements were begun at the end of the first week, and after a fortnight, apart from some tenderness over the front and inner side of the joint, he was quite well, passive movements being quite free and painless. So that probably recovery will ultimately be complete, although judging from the experiences of similar cases in South Africa, there is still a possibility of a popliteal aneurism or an aneurismal varix forming at a later date.

This case appears to be interesting from two points of view.

Firstly, in connection with the much debated question whether a bullet can or cannot traverse the knee joint antero-posteriorly without inflicting any osseous injury. Stromeyer denies the possibility of such an occurrence in any position

of the joint, in this Langenbeck concurs. One case occurring in the Crimean War is described by Legonest, who considers such an event extremely rare. On the other hand, the late Professor Simon of Heidelberg, stated that in any position but complete extension the tibia and femoral condyles are sufficiently separated to allow the passage of a bullet without fracture of the articular ends. Otis in his "Surgical History of the War of Rebellion" agrees with this dictum, and mentions cases which came under his notice. Simon's view would appear to be borne out by the case mentioned above.

Secondly, as showing the great lessening in gravity of joint wounds, this diminution being due to the advent of antiseptics and bullets of small calibre. The mortality of *mere capsular* wounds of the *knee-joint* in the Crimea was 21.9 per cent, while in the Russo-Turkish War of 1877 Reyher's "Primary Aseptic Cases" which appear to have consisted largely of capsular injuries showed a mortality of 16 per cent. The South African War has shown a great improvement on this, and Makins in his book says "in absence of bone injury the wound was without ill effect except a transient effusion into the joint. The liability for pieces of clothing to be carried in which constitutes one of the dangerous factors seems to depend largely on the thickness of the material. South African experience showing that bullets passing through thick Highland kilts generally carried a piece of the cloth with them, while they merely cut through khaki without taking any away. In the case above described, the trousseau which was of thin cotton showed no loss of substance. The great decrease in mortality of joint wounds would appear to bear out Von Coler's prophecy in his report to the German Government on small calibre bullets, when he stated that with the advent of these small bore weapons joint injuries, formerly the most dangerous of injuries, would take their place as 'one of the most favourable hits on bones'."

STATISTICS OF THE MEDICO-LEGAL INVESTIGATIONS IN MORADABAD, 1896—

1901, INCLUSIVE

By J. K. CLOSE, M.D.,

MAJOR, I.M.S.,

Civil Surgeon Moradabad

Altogether there were 2,499 investigations in the six years comprising—

Examination of injured persons	2,043
Examinations of suspected lunatics (of these 33 were certified)	49
Examinations to determine probable age	19
Suspected poisoning	6
Rape and unnatural offences	24
Post-mortem examinations	353

Total 2,496

The *post-mortem* examinations gave the following results —

<i>Injuries</i> —Fracture of the skull	87
Seventy seven of these were fractures of the vault (25 extending into the base), in one the internal table only was fractured, 5 were fractures of the base alone, and in 5 it is not recorded precisely what part was involved. In 25 there was depression of the fractured bone, and in 59 there was hæmorrhage inside the skull compressing the brain. In seven instances of fracture of the skull, there were also present other mortal injuries, i.e., rupture of the spleen three times, rupture of the kidney once, and cut throat three times, in one of these there was also a penetrating wound of the abdomen.	
Intercranial hæmorrhage, from injury of the head, the skull being unbroken	4
Concussion (probable)	2
Injury to head (not specified)	2
Scalp wound followed by erysipelas	2
Decapitation (railway injuries)	2
Fracture of upper jaw followed by septicæmia	1
Wounds of the neck	9
Dislocation of odontoid process and crush of spinal cord	1
Spasm of glottis from hair impacted in larynx	1
Suffocation, in two cases from vomited food in the air passages, and in one from the pressure of a large dry bolus of food in the pharynx	6
Strangulation	3
Hanging	0
Drowning	6
Poisoning by charcoal fumes	4
Fracture of ribs with injury of lung, &c	3
Rupture of lung	1
Gunshot wounds of chest and lungs	3
Wound of heart	3
Rupture of heart (from fractured ribs)	1
" of liver (from crush of chest in one case)	3
" of spleen (excluding cases where the skull was also fractured)	18
Penetrating wounds of abdomen	11
Wound of abdomen through rectum by the introduction of a pointed instrument	1
Gunshot wounds of abdomen	2
" of pubis	1
" of scrotum and thigh	1
Compound fracture of femur	1
Gunshot wound of leg	1
Compound fracture of tibia followed by pyæmia	1
Burn followed by pyæmia in one case	2
Hæmorrhage from punctured wounds	1
<i>Diseases</i> —	
Whooping cough	1
Enteric fever	2
Dysentery	3
Malarial fever	2
Tubercle (of lungs)	2
Leprosy	1
Starvation	1
Hydrocephalus (congenital)	1
Convulsions (infantile)	1
Endo-carditis	4
Valvular disease	2
Bronchitis	15
Pneumonia	1
Imperfect development of lungs (only partial expansion)	1
Enteritis	1
Diarrhœa	5
Peritonitis (one from perforation probably typhoid)	1
Chronic Bright's Disease (general dropsy)	1
Chronic Wasting disease (nature not specified)	7
Natural Causes (not specified)	3
Still-born	10

<i>Poisons</i> —	
Narcotic—opium	14
Datura	2
Alcohol	1
Not specified	6
Irritant—arsenic	16
Not specified	3
Poison not specified	1
Snake bite	1
Uncertain (mainly from advanced decomposition)	50

Total 353

Of the above, 248 were males, 104 females, and in one the sex was not recorded, 25 were infants (15 male and 10 female), of whom 10 had never breathed, and 8 of these were premature, the sexes being equally represented. There were 3 cases of congenital defect, 2 directly causing death, i.e., hydrocephalus and imperforate expansion of the lungs, both male infants, and one case of non closure of the inter auricular septum in a female infant. The remaining causes of death which were ascertained were head injuries, 3, drowning, 1, diarrhœa, 1, convulsions, 1. In 2 decomposition was too far advanced for the cause of death to be discovered. Other points of interest that were observed in the above series, were —

A supernumerary thumb on the left hand of a woman

A case of uterus septus, the septum occupying the upper third of the uterine cavity.

Hour glass contraction of the stomach in an old woman of about 80 years of age, who probably died from chronic malaria, the walls of the stomach were thickened and thrown into deep longitudinal folds.

In a man of about 40 who died of pneumonia, a gall stone, the size of a large hazel nut was found, it was of the laminated cholesterine variety.

In one case there were found numerous cysts of the liver with straw-coloured fluid contents, they were probably hydatids, though this is not stated.

In seven males and one female cysts of the kidney were found containing clear fluid, and in one female the right kidney was converted into a cyst (Hydronephrosis).

The above list gives a fair idea of the amount and variety of the medico legal work in an average district. The large number of deaths which were found on investigation to be due to disease, is a point of special interest showing that suspicions of foul play are not seldom unfounded.

The absence of cases connected with child birth, abortion, &c, is partly apparent only. Such cases are rare, but five or six were sent for investigation. In every instance, however, the bodies were so much decomposed that no definite conclusions were possible.

No one who knows the climate will be surprised at the number of cases in which it was totally impossible to give any opinion as to the cause of death.

A SONG OF THE PEACE

WE understand that Major Allan E Grant, I.M.S., the Deputy Sanitary Commissioner, Madras, has recently composed and published the spirited and popular song known as "Marching Home," written to celebrate the proclamation of Peace, and the return of the troops from South Africa.

The song is obtainable from Messrs Misquith & Co, Madras, and at all music sellers.

We have no doubt it will soon be as popular in India as it has begun to be at home.

THE
Indian Medical Gazette

JULY, 1902

MODERN VIEWS ON DYSENTERY

IN March last the County Medical Society of Philadelphia held an important discussion (or "symposium" as the Americans would call it) on the subject of dysentery which is worthy of being here noticed as it sums up the most recent views on the varieties of this important disease. In the discussion the papers contributed by Osler and Simon Flexner are specially of value. We will deal with the latter's paper first as it discusses the more general aspect of the question. Flexner (who it may be remembered was sent to study this disease in Manila) begins by dividing dysentery into three forms: (1) catarrhal, "the clinical and pathological manifestations of which occur in a wide group of diseases," it is rather a *secondary* than a primary dysentery, and (2) amœbic, and (3) bacillary.

The latter then are two great varieties of dysentery, and their etiological classification seems likely at last to produce order out of chaos.

With reference then to amœbic dysentery. The article on this subject is appropriately put into the hands of Osler as it was first studied and differentiated at the Johns Hopkins University Hospital at Baltimore, and the monograph of Councilman and Laffey on amœbic dysentery was based upon cases occurring in Osler's wards in that hospital. For those who have not the original monograph the article by Laffey in Allbutt's *System* (vol. II, p. 753) may be referred to.

The discovery of amœbic dysentery may be said to date from March 1890 when Osler found amœbæ in the liver abscess of a young doctor from Panama, since then 93 cases of amœbic dysentery have been admitted into the Johns Hopkins Hospital, in 23 of which a liver abscess was found. Osler describes the disease as a sporadic affection not occurring in widespread epidemics. It is not an institutional disease, though cases often come from the same family or group of persons. It is chiefly found in males and is more common in adults than in children.

Amœbic dysentery very rarely runs an acute course, in the vast majority of cases it is chronic, characterised by frequent stools containing mucus, blood, pus and amœbæ. The cases are usually chronic or subacute from the beginning, and the disease drags on for many months or years with alternating periods of constipation and diarrhoea. Very few patients die of the dysentery *per se*, of Osler's 93 patients only two died of asthenia induced by the dysentery itself, and two more from perforative peritonitis.

The most important feature of this type of colitis is, of course, the liver abscess, which occurs about once in every four cases. In Strong's cases in Manila there were 14 instances of liver abscess in 79 cases, so that it is probable that this proportion (1 in 4) is too high, for the liver abscess cases always come to hospital, and after all it must be remembered that amœbic dysentery is not always diagnosed, and in fact has been studied chiefly in cases complicated with liver abscess.

So much for amœbic dysentery. It also undoubtedly exists in India, but here also it has been studied chiefly in connection with liver abscess. Any one who will study the admirable pictures of amœbic dysentery which Dr. Leonard Rogers has collected and has got painted by the artist of the Medical College Hospital, Calcutta, will not fail to distinguish the lesions there depicted from the more familiar appearances of the chronic dysentery of our jails and hospitals. Dr. Rogers finds that nearly every case of liver abscess contains amœbæ in the abscess wall, not necessarily in the pus, and nearly every such case has intestinal lesions due to the amœbæ. Another kind of liver abscess—the pyæmic—may, of course, also be found, which is due to absorptions from the sloughing patches in terminal dysentery, it is of the bacillary kind.

So much therefore for the amœbic form of dysentery. Let us now turn to the bacillary form,—due to the bacillus dysenteriae of Shiga, for it is to Japan that we are indebted for the differentiation of this cause of dysentery as well as that of plague.

The presence of bacteria in the stools and tissues in dysentery has been demonstrated many times, indeed the real difficulty of investigators from Klebs to Shiga came from the very abundance and variety of organisms met with, and the problem was only solved by the appli-

cation of the agglutination phenomenon. From a series of 36 cases Shiga found that his organism (1) occurred constantly, (2) it was not normally present in the diseased part, (3) it was pathogenic and produced somewhat similar lesions experimentally, and (4) it showed the agglutination reaction with the blood sera of those who had suffered from the disease. He, therefore, concluded that it was the cause of Japanese dysentery. In 1899 Flexner and Barker were sent by the Johns Hopkins University to Manila, and they began to study the dysentery which so largely affected the American troops there. They soon found that the acute dysentery of the troops was due to a bacillus agreeing in all respects with the organism separated by Shiga, and subsequent study by Strong and Musgrove in Manila confirmed this conclusion. On his return Flexner found the same organism in a case of dysentery from Porto Rico, and more recently, Vedder and Duval, pupils of Flexner, found it also in many cases of dysentery in Philadelphia and Connecticut, and Kiuse of Bonn has announced a similar finding in an outbreak of dysentery at Laai in Germany.

That Shiga's bacillus is the cause of much of the dysentery of the jails of India is probable from that fact that two cases, under the care of the present writer in Alipore Central Jail,* were examined, and their serum found to react with this organism in the Medical College Laboratory by Dr L. Rogers. These discoveries therefore indicate a great step forward in our knowledge of the etiology of dysentery.

For a time after the publication of the Johns Hopkins monograph on amœbic dysentery there existed a strong tendency among many writers (especially those who had first studied the disease in the Spanish-American War) to assume that all dysenteries which were met with in the tropics were amœbic, and indeed the expression "amœbic or tropical" found its way into text-books, the authors of which should have known better. It is a matter of satisfaction to us that we have strongly and frequently protested against this view. We refused to believe that the ordinary

dysentery so common in the jails and dispensaries of India was due to the amœbæ, and we objected strongly to the assumption that tropical dysentery was synonymous with amœbic.

Now the matter has become clear, amœbic dysentery does exist in India in a sporadic fashion, it is rarely diagnosed as such, it is very often complicated by liver abscess, and the amœba may be considered to be one cause of the "tropical" liver abscess.

On the other hand, the common dysentery of our jails and hospitals is not amœbic, but bacillary and is not followed or associated with liver abscess, except in those cases which have been described by the present writer (*British Medical Journal*, 9th September 1899) as "terminal" dysentery, when a multiple pyæmic infection of the liver may occur due to the absorption of organisms or their toxins from the sloughing patches in the great intestine.

We recommend the subject of dysentery to our readers and hope that soon many attempts will be made in India to confirm the connection between ordinary dysentery and Shiga's bacillus by means of the serum-agglutination reaction. Let us remember, however, that even though the amœba and Shiga's bacillus are the causes of the two main varieties of dysentery we as yet know nothing as to the means whereby they are conveyed into the system. A great reputation awaits the discoverer of this, the missing link in the etiology of the second most important disease of the tropics.

LONDON LETTER

THE NEW WARRANT

THE long-looked-for warrant for the reorganization of the Royal Army Medical Corps has at last appeared. It was issued on the 24th of March, and has therefore been before the profession and public for some months. The verdict has, on the whole, been a favourable one. The provisions of the warrant have been conceived in a liberal spirit, and if the administrative regulations by means of which it is to be worked are similarly actuated and framed the conditions of the service ought to prove attractive to a sufficient number of good men. The military rank of officers has not been interfered with, and the constitution of the corps remains essentially as it was. The Director-General has

* [Since the above was written we hear that Captain W. Pridmore, I M S., Civil Surgeon of Bhamo, Burma, working with cultures supplied by Dr. Flexner, has found Shiga's bacillus to react in cases of Jail dysentery in Bhamo. This is important confirmation of the universal distribution of the Shiga Flexner bacillus of dysentery.—ED., I M G.]

been raised in rank and accorded a position commensurate with his office and functions. The pay of all ranks has been substantially raised with one exception—that of Colonel Charge. His pay has been sanctioned and additional allowances for special qualifications. The scheme of examinations has been modified, but details are wanting on this head. These are promised shortly, but it looks as if wiser councils had prevailed and as if the earlier menace of perpetually recurring tortures had been materially modified, and the ordeal reduced to that measure of testing which now obtains in every public service and appears to be needful in order to obtain evidence of continued diligence and capacity in discharge of duties which are ever changing with the forward movement of science and art. Accelerated promotion is to attend on success in these examinations, and provision has also been made for rewarding distinguished service in the field and otherwise. The otherwise is not defined, but it is reasonable to assume that it includes exceptional scientific study and professional success. The warrant is silent as regards the important question of raising the strength of the corps and is silent also respecting Indian pay and allowances. This matter must be settled by the Indian Government, and that is probably the reason why no mention is made of it. The profession and service are anxious to know what is to be done in this direction, and a reasonable expectation exists that the scale of pay and allowances in India will be raised in proportion to the rise of remuneration at home.

These remarks represent fairly well current opinion, but the text of the warrant has no doubt been published *in extenso* in India, and the comments which have appeared in the press, medical and lay, have also no doubt been seen and studied. No intimation has been as yet made regarding the time and nature of the next entrance examination for the service. The result of that will supply the most practical and real evidence as to whether the provisions of the warrant are popular and attractive. The organization of the new medical staff college has not been as yet announced, but it is understood that the advisory board has taken the subject into serious and careful consideration, and that arrangements of an adequate kind will be made for the instruction of young officers entering the service and of seniors who wish to refresh their knowledge or study special subjects.

CANCER RESEARCH

The scheme for the investigation of cancer of which I wrote in a previous letter has now been matured and has received the sanction of both the Royal Colleges. Some progress has also been made in the important and essential matter of accumulating a fund. It is estimated that some £100,000 will be required to carry on the various inquiries embraced in the scheme which have been devised on the broadest possible basis so as to include every description of knowledge which it is possible to collect. The organization of scheme has been carefully drawn up and made as representative as practicable, office-bearers being selected from professional and scientific association in all parts of the kingdom. The veterinary colleges have been very properly added to the list.

Steps have also been taken to enter into correspondence with other agencies and institutions at home and abroad which have interested themselves in the subject or are likely to do so. The effort is thus co-operative and promises to be fruitful. Whether the nature and causation of cancer and malignant disease will be discovered through this enterprise, it is of course impossible to predict, but the disease or diseases denoted by these terms constitute a very dark blot in the pathological map, and until it has been removed there is no hope of success in treatment whether preventive or curative. The Polyclinic is also concerning itself with the investigation of cancer. One of several special committees appertaining to this institution is engaged in collecting and discussing information relating to the disease.

THE LATE DR PATRICK THURBURN MANSON

The news of the death by accident of this very promising young physician has been received with the profoundest regret. The accident occurred on the 15th of March on Christmas Island in the Malayan Archipelago, whither Dr Manson had proceeded to join Dr Durham for the purpose of investigating beri-beri. He was the eldest son of Dr Patrick Manson, and evidently inherited his gifted father's enthusiasm and capacity. It will be remembered that he volunteered to become the subject of a crucial experiment regarding the conveyance of the malaria parasite by the mosquito. He submitted himself to be repeatedly bitten in London by insects which had been fed on the blood of a patient suffering from benign tertian in Rome. After the usual

period of incubation he developed typical symptoms of tertian ague, and the characteristic plasmodium was found in his blood. Not only so, but on more than one occasion, months afterwards, he suffered from relapses, and during these the parasite reappeared in his peripheral blood. The experiment is entitled to the place of a historical experience from both these points of view. The full particulars of the incidents of this trial ought to be placed on record in conjunction with a short memoir of its subject. Notes were contributed by himself of the original attack and first relapse in the *British Medical Journal*.

VOLCANIC ERUPTIONS IN THE WEST INDIES

THE havoc and loss of life which have been caused by the recent eruptions of Mount Pelee in Martinique and of Mount Soufrière in St Vincent have more than equalled the destruction wrought by the eruption of Mount Vesuvius in the year 79 which overwhelmed the towns of Pompeii and Herculaneum. The town of St Pierre in Martinique was suddenly enveloped with lava and burning cinders and dust, and the inhabitants with few exceptions suffocated or burnt. Great destruction of houses and plantations in the interior also took place. This occurred on the 7th of May. The loss of life is computed to have been about 30,000. The eruption of La Soufrière in St Vincent is reported to have ruined a large extent of the surface of the island and killed a great number of its inhabitants. Floods have added to the gravity of the catastrophe, the effects of which have been felt at sea and given rise of considerable loss of shipping. The volcanoes are still in a state of activity, and according to the latest tidings the town of Fort-de-France is being rendered untenable, and its surviving inhabitants are obliged to flee. The disaster is one of peculiar gravity and horror, and will take its place in history as one of the most terrible that has ever occurred. Details are wanting as to the number of victims and the extent of destruction, but it is certain that the loss of life and property has been very great. Aid is being rendered to the survivors, many of whom have been seriously injured and most made homeless and destitute. Deaths are said to have been chiefly due to suffocation by the sulphurous smoke, but a considerable proportion of fatalities has been caused by lightning and burning lava. Volcanoes and earthquakes are un-

doubtedly the most alarming and upsetting of all natural disturbances. The psychological effect is peculiarly distressing. Our sense of dependence on mother-earth is such a fundamental instinct that when the crust on which we live begins to rock or subterranean forces cause molten steams to issue through holes and cracks and volumes of burning stuff are forcibly squirted into the air and rained on the land, the feeling of desperation and terror must be exquisitely acute. No commotion of atmosphere or water-storm or flood produces so great a fright and collapse. The plight of the inhabitants of these West Indian islands is indeed pitiable. Ruin and dread have overtaken them unexpectedly while living in prosperity and comfort and fancied security. Earthquakes, cyclones and storm-waves have wrought wholesale havoc in India, but the worst disaster on record falls short of this West Indian convulsion which has wrecked some of the farrest and richest islands of the Windward group. It is curious how men settle close to these volcanic dangers. One passes near the active volcano of Stromboli on the way home from India and observes thriving villages and happy looking homesteads on the slopes of the burning hill on some aspects of which streams of lava have flowed down to the water's edge, so was it no doubt in Martinique and St Vincent.

THE MIDWIVES' BILL

From volcanoes to midwives is a somewhat strange transition, but as in the world at large the recent volcanic disasters have been the most absorbing subject of attention, so in the medical world the fate of the Midwives' Bill, which is now passing through Parliament, is a subject of great interest and anxiety. The Bill has been read a second time and passed through committee and has now reached the report stage. It has undergone no material alteration in committee. Notice has been given of various amendments, but the probabilities are that it will become law in its present form. The "Midwife," which the Bill contemplates, is not the monthly nurse, or nurse midwife, or midwifery nurse, but a person who undertakes to deliver women, leaving no doubt the labour of nursing to some inferior auxiliary. Persons of this sort, known as "diplomæd midwives," are common enough both in this country and in India. The present Bill proposes to recognise them legally, to register them, offer them certain privileges and facilities

in practice, and subject them to some supervision and control. The British Medical Association declares that the Bill thus creates a new order of medical practitioner and does not at the same time provide sufficient safeguards as respects their education training and competence, nor provide specifically that their practice is to be limited to normal cases, nor define what abnormality signifies, nor prevent ignorant, unqualified unregistered women from practising as long as they do not call themselves midwives. The new midwife is certainly prohibited from giving death certificates or undertaking abnormal cases or treating puerperal diseases, and some restraint is thus placed on recklessness, but the bill does not insist on a medical practitioner being called in under these circumstances, nor does it impose any penalty on the neglect to do so. These are no doubt imperfections, but the success or failure of the bill, should it become law as is likely, will depend on the spirit and manner in which it is worked. If the new midwife arrogates independence and sets herself up as the equal and rival of the doctor, mischief will arise, but if she contents herself with occupying a lower, subordinate and ancillary position, realizes the limits of her practice and freely calls in the medical practitioner in all cases and circumstances of doubt and danger, then she may prove a valuable public servant and a useful ally and help to the doctor. Another sore point about this bill is that it has practically set the Medical Council on one side and given this body no direct association with or control over the new "Midwives' Board" which is to constitute the central authority. It is contended that, as the registration of dental practitioners has been entrusted to the Medical Council, so might also the registration of midwives. This is, however, not to be, and the Council has only retained the privilege of giving advice when that is sought. After all law does not create but rather confirms and stereotypes usage, and it is probably a good thing to start with some law, the adaptation and working of which can be watched, and the amendment of which can afterwards be accomplished according to need in the light of experience. The terms of this Act seem to be sufficiently elastic to permit of safe and suitable rules being laid down to govern the conduct and practice of midwives, and these can no doubt be modified in time or adapted to the requirements of special circumstances or

places. On the whole, I am not inclined to view the bill with such disfavour and apprehension as are entertained in some quarters.

THE REPORT OF THE SANITARY COMMISSIONER WITH THE GOVERNMENT OF INDIA

The report for the year 1900 has been recently distributed by the India Office. It is considerably less bulky than usual, and the arithmetical material has been relegated to the end of the volume. Neither of these changes has impaired the interest and value of the report which has been drawn up with great skill and ability. The *pieces* of current literature relating to tropical diseases is most valuable. The name of the compiler has, in accordance with recent custom, been omitted. This is regrettable, for although the report is issued under the sanction and authority and presumably supervision of the head of the department, the labour of compilation has, it is well known, been performed by his Secretary, and the credit thereof ought to be assigned to him just as the work of compiling the statistical part of the volume has been done by the Statistical Officer and acknowledged accordingly. It would add to the value of the report if it were prefaced by a summary of the features and events of the year, the physical and climatic characters of the period, the occurrence of exceptional incidents such as droughts, earthquakes, cyclones and the like, the state of crops and price of food, the political and social conditions of the time, the existence of war, pestilence or famine and any other influences bearing on public health. The vital statistics of the population and prevalent diseases might then be discussed and of special sections of it, and information given regarding sanitation and sanitary works, vaccination, scientific institutions and research, and other subjects bearing on the salubrity of the Indian Empire and its population. In order to read the report intelligently in its present form one must like the bee extract the honey from a section or paragraph here and there, and store the precious product in the cells of the brain after some such system as has been defined. Nevertheless the record of the fatal year 1900 possesses in whatever shape it is presented a peculiar importance, and the facts have been carefully and conscientiously set forth in the publication.

22nd May 1902

K McL

Current Topics.

THE SANITATION OF MOFUSSIL BAZAARS

AN excellent little pamphlet with the above title has been recently published* by Mr. G. W. Disney, A. MEM I.C.E., the District Engineer of Mozufferpur. A concise hand book of this kind was certainly needed, and this should be of great value to the Health Officer, the Engineer and the Chairman of Local Boards and Municipalities.

The first chapter deals with latrines and urinals, and how sound Mr. Disney's views are may be understood from the following extract from the preface—

"The real secret of sanitation is the prompt removal of fecal matter and refuse from the neighbourhood of inhabited buildings before it has time to decay, as in the early stage of putrefaction emanations are evolved which are dangerous to health, it is also an admitted fact that the common fly is a considerable factor in disseminating disease as it conveys germs on the pads of its feet from infected matter to the food supply of the inhabitants."

Mr. Disney strongly recommends Bailey's and Donaldson's latrines, and also the Hindu Patent Urinal. For disinfecting purposes he properly recommends perchloride of mercury, but we think it would have been wise, in a book mainly intended for non-scientific readers, as Chairmen and Commissioners of Municipalities, to have added that this drug is a poison, and all disinfectant solutions of it should be coloured with some aniline dye.

The second chapter contains good and practical advice on the removal of night-soil, and gives many practical hints as to the best methods of disposal, the way to use trenching grounds properly, and the best receptacles to use. Chapter III pays a well deserved compliment to the management of the trenching ground of the Bundwan Municipality which, when we knew it a few years ago, was admirably farmed and managed by a medical Chairman. The Allahabad shallow trenching system is described, and it is known to be a good one where plenty of land is available. Mr. Disney calculates that for a good bazaar trenching ground one acre for every 833 persons is required, or say 12 acres for every 10,000 inhabitants.

Other chapters deal with incinerators, refuse bins, drainage, cleaning and repairing wells, biological disposal of night-soil, trees, tanks, water-supply for dhobies, disposal of the dead, burning ghats, &c.

The whole little volume is eminently practical, it is well printed, fully illustrated, and can be strongly recommended to our readers who will find many hints of use to them in their capacity as Health Officers. Our only fault

with the little book is that it is too short. It might well have been expanded.

HAS PELLAGRA EVER BEEN OBSERVED IN INDIA?

THE letter from Assistant-Surgeon Ray which we publish in another column raises the interesting question as to the existence in India of pellagra, a disease which is so common and disastrous in many parts of Southern Europe and in Egypt.

At first sight there is nothing improbable in the existence of such a disease in India, its necessary accompaniments are poverty and the use of bad maize as a food.

We may also note that Dr. Sandwith, of Cairo, in the latest account of the disease (*Encyclopædia Medica*, Vol. IX) remarks that "many medical officers have recognised my photographs as a disease occurring among out-patients in India."

Pellagra, like ergotism and lathyrism, is essentially a disease dependent upon inferior or diseased grain, in the case of pellagra it is a "chronic intoxication analogous to ptomaine poisoning, due to eating damaged maize (*Zea Mays*)" (Sandwith). Now this cereal maize, or Indian corn, is one of the most widely cultivated of crops, and the area of the geographical distribution of pellagra is a mere patch on the map of the maize cultivation of the world. It is only diseased maize which in Roumania, Italy or Egypt which can produce pellagra. The exact nature of the toxin is not known, and the common *Reticularia Ustilago* to which it has been rashly attributed is not even mentioned by Sandwith in the article referred to. Everyone who has ever stored maize knows that it becomes bad and weevil-eaten by March or April, and it is known that the flour ground from the mutant hollow husks can give rise to outbreaks of diarrhoea, but this is not the form of diseased maize which gives rise to pellagra. All we know is that maize stored in damp dark cellars can acquire this toxic property.

The essential symptoms of pellagra are—(1) the dermatitis, thickening and final atrophy of the parts of the skin exposed to the sun, (2) the raw tongue, the dyspepsia, emaciation and terminal diarrhoea or dysentery, (3) the loss of kneejerks, the insomnia, the paresis, and above all the progressive gloom and melancholia which ultimately land numbers of the sufferers in the asylum.

Now in considering the possibility of the disease in India we have first the fact that maize is largely grown as a staple food of the population, for many months of the year, in Bihar and the neighbouring districts of the United Provinces, secondly, it is by no means uncommon among out-patients attending our dispensaries to see cases with thickened wrinkled hardened skin on the hands, shoulders, neck and arms which closely resemble the skin lesions

* Calcutta Messrs. Thacker, Spink & Co., 1902. Price, Rs. 2 8.

of pellagra, moreover, the digestive symptoms, the raw tongue, the diarrhoea, &c., are far from uncommon, but we have never yet heard of or seen any case in which we have the whole combination of cutaneous, digestive, cerebro-spinal and mental symptoms, and till such has been described we cannot believe in the existence of pellagra in India.

It would, no doubt, be worth paying more attention to these cases of thickened skin which are not uncommon especially on the hands, which make the hands of a young or middle aged cultivator as wrinkled as those of an old man of eighty.

The ultra violet rays of the sun are said to be the cause of these cutaneous changes in Egypt and Italy, and they may well have the same effect on the exposed skins of Bihar cultivators. But, like ergotism, pellagra is something more than exaggerated sunburn, connected with it is found a chronic parenchymatous neuritis of the posterior roots, and frequently sclerosis of the columns of Goll, but indeed very similar spinal cord lesions have been found in ergotism and still more remarkable, in that rare disease erythromelalgia, so that their exact significance is as yet undetermined. To conclude, we are of opinion that the group of symptoms known as pellagra has not yet been recognised in India and it is more than doubtful if the disease will be found to exist there.

MAHAMARI OR PLAGUE IN GARHWAL HILLS

THE report to the Government of the United Provinces, extracts of which we reproduce in another place, is a very valuable one, and Major Chaytor-White, DPH, IMS, the Sanitary Commissioner, U P, is to be congratulated on having finally settled the question of the identity of the disease known in Kumaon and Garhwal as *mahamari* with the true plague which has spread over most parts of India during the past six years. The word *mahamari*, as is well known, means only "the great disease or death," and corresponds in fact to the expression "the black death," which has been given to several epidemics in the middle ages in Europe. There is another vernacular term *sanjar* which is also applied to epidemics of disease in these hills, and in all probability it is used to denote epidemics of lesser virulence of many forms of infectious disease. One form of *sanjar* is certainly relapsing fever, as was shown by Captain Leonard Rogers, M.D., IMS, in his paper in *Indian Medical Gazette* (May 1899, p 151). It is worth noting that relapsing fever as well as plague is endemic in these hills just as they have been found concurrently in the city of Bombay for several years past, a fact which points to some common factor in their etiology.

Mahamari is no new disease in the Kumaon and Garhwal districts. As Major Chaytor-White has pointed out in the detailed report from which

we have abstracted the above account of the recent epidemic, this disease was probably common in the 17th and 18th centuries, but our earliest records date back only to 1823, from which date outbreaks have occurred, with periods of intermission, with considerable regularity down to the present day. In fact, these districts are now recognised as one of the four endemic foci of plague.

The records of this disease are numerous, and have often been described in the various histories of plague which have been written within the past few years, so that we need not detail them here.

The important point in Major Chaytor-White's report is the fact that he was able to obtain cultures, and so place beyond a doubt the identity of the Garhwal disease with the plague now pandemic.

THE Association of Military Surgeons of the Army of the United States held their annual meeting at Washington in June. The programme was an excellent one, and we hope later on to deal with the transactions as soon as the full reports have reached us.

VON FRISCH'S experience, based on what for an European operator is a very large number of cases of vesical calculus, viz., 400, leads him to support the statements of Indian surgeons that litholapaxy is the safest, and in most cases the indicated operation for the relief of this condition. Failing litholapaxy Von Frisch performs suprapubic cystotomy. We recommend a perusal of his papers in the *Werner Klinische Wochenschrift* (Nos 13, 14, 15 of 1902) to those surgeons at home who are still inclined to doubt the advantages of Bigelow's operation, in spite of all evidence from India.

THE new constitution of the *British Medical Association* as given in the *Journal* of 24th May should be studied by all members. It seems as if we who are members in India must join "divisions" or other local branches, so far, Madras and Burma have then flourishing branches, but neither in the Presidency of Bengal or Bombay do such exist. Practically it is the *Journal* which makes men abroad join the Association, but at times the Association has been of use to the services, and for the R. A. M. C. especially it has fought hard and well. As regards the Indian Medical Service its intentions, good as they are, would be improved by a greater degree of knowledge.

THE attention of our readers in Bengal is specially invited to the letter from the Inspector-General of Civil Hospitals, Bengal, which we reproduce below. It is of great importance that the names of all medical men in Bengal should be entered in this list accurately.

The list is an excellent step towards the registration of medical practitioners, and it is our interest that it be correct and that only duly registrable qualifications or those recognised by the Government of India should be included.

WITH reference to our remarks in the special medico-legal number as to the use of charcoal for the preservation of corpses from decomposition, we may add that this suggestion was made by Colonel T. H. Hendley, CIE, IMS, in 1900, and the Government of Bengal issued orders to that effect (I-G C H's Circular 125, dated 25th October 1900). Under this authority Civil Surgeons should therefore insist upon this being done where necessary, from information we have received the charcoal is certainly not used as frequently as it might be even in Bengal, and doubtless also in other Provinces.

Reviews

A Manual of Surgical Treatment—Part V

By W. WATSON CHEYNE, CB, FRCS, FR S, & F. F. BURGHARD, MD, FRCS. LONGMANS, GREEN & Co, London, 1901.

THE first half of this volume coincides in general plan with that of the volumes previously issued, and deals with the treatment of the surgical affections of the head, face, jaws, lips, larynx and trachea. But the latter half of this book, forming a special division of nearly 200 pages, is simply a treatise on the intrinsic diseases of the nose, ear and larynx, which has been entrusted to the pen of H. Lambert Lack, MD, FRCS, Surgeon to the Hospital for Diseases of the Throat, Golden Square. Here the rule of avoiding material more suitable to students' text-books has been relaxed to admit of preliminary chapters on the anatomy, methods of examination and treatment of the nose and accessory cavities, ear and larynx.

After describing affections of the scalp the authors proceed to give a practical dissertation on fractures of the skull and the intracranial injuries comprised by the terms concussion, contusion, laceration, and compression of the brain. The authors favour the theory of cranial elasticity as being the chief factor in the production of a large number of fractures of the skull.

There follows a valuable chapter on intracranial suppuration with lucid descriptions of the surgical technique for opening the mastoid antrum, for exposing the lateral sinus and for dealing with thrombosis therein, for opening an extra dural abscess over the root of the tympanum, for subdural suppuration, and for cere-

bral and cerebellar abscess. We notice that the incision for the operation upon the mastoid antrum given at p. 61 varies considerably from that given by Mr. Lick at p. 404, which latter is the more usual one in vogue. At the same time the descriptive diagrams on both these pages are identical.

The hints given for avoiding hernia cerebri are good. Operations for microcephalus the authors do not advise, because they consider early ossification is probably the result of non-development of the brain and not the cause. Mr. Watson Cheyne being himself the pioneer of operations for hydrocephalus based on Dr. Leonard Hills' theory, we expected a fuller account of the surgical procedure. But probably the ultimate non-success of these operations has led to curtailment in description.

There is a good chapter on trigeminal neuralgia, and the different neurectomies for the various branches of this nerve, *eg*, supra and infra-orbital neurectomy of the superior maxillary nerve and ablation of Meckel's ganglion, neurectomy of the inferior dental, gustatory and auriculo-temporal nerves, with descriptions of Rose's, Hartley's and Horsley's methods for removal of the Gasserian ganglion. The plastic surgery of the nose, eyelids and mouth is ably described both in the text and by diagrams. Special note may be made of an ingenious operation for repairation of the nose. The subjects of cleft palate and hare-lip also receive most careful attention, and the practical hints given concerning operative measures for these defects are valuable. Here, also, the diagrams used are most serviceable.

Injuries and tumours of the jaws receive due attention. In the treatment of cut-throat the authors recommend tracheotomy as the rule with few exceptions, more especially should this be done whenever the air-passages are cut into. Preliminary tracheotomy is recommended in all operative procedures for cancer of the larynx. In complete laryngectomy, the authors particularly urge that the communication between the pharynx and trachea should be permanently cut off by sewing up the mucous membrane of the pharynx,—in preference to the method in which provision is made for an artificial larynx, because the mortality after the former procedure is so much less.

The second division of the book is simply a monograph on diseases of the nose, ear and larynx. Considerations of space permit of only a cursory glance at work which maintains an equally high standard. The diagrams and illustrations are good and in sufficient number, many useful medical formulæ are supplied, and the text is quite up to date.

Suppuration in the mastoid antrum and cells and the operative procedures ably treated. So also with the rest of the section on the ear and with the section on the larynx.

Laryngeal phthisis is here regarded as invariably a complication of pulmonary tuberculosis, as opposed to the view expressed by a few individual specialists. Those who already possess the preceding volumes will readily add this volume to the series, and those who read this volume first will probably be induced to purchase the volumes which have preceded it.

Saunders' Year Book of Surgery for 1901.

LONDON AND PHILADELPHIA

THIS surgical digest is a handsome volume which forms one part of Saunders' Year Book of Medicine and Surgery. It is produced under the editorship of Dr George M. Gould, who has a baker's dozen of collaborators to assist him in a work compiled from so many and so various sources. It is divided into eight sections, *viz*, General Surgery, Obstetrics, Gynaecology, Orthopedic Surgery, Ophthalmology, Otology, Diseases of the Nose and Larynx, and Anatomy. The articles are condensed from papers in British, American, Canadian, Australian, French and German journals.

The work runs to six hundred pages and includes a good index.

Naturally the largest section is devoted to general surgery, which has the place of honour and takes up more than a third of the book. As might be expected the larger part of this is concerned with advances in the surgery of the abdomen and pelvis, and of the brain and spinal cord, with special articles on asepsis and antisepsis, anaesthetics and X-rays. Obstetrics and gynaecology follow next in order, and in importance as regards the amount of space allotted to them. An ingenious obstetric calendar is figured with the months arranged in three circles in such a way that the calculation may be made with the utmost rapidity and simplicity. The articles in the sections on orthopedic surgery, nose and larynx, and anatomy are too brief and scatty, except merely as giving references to journals. The term *anatomy* as applied here is rather a misnomer, for the section deals more with abnormalities and malformations which turn up occasionally in the daily routine of the surgeon.

Leçons sur les Maladies du Système Nerveux

par F. RAYMOND, Professeur de Clinique des Maladies du Système Nerveux à la Faculté de Médecine de Paris. 4^{ème} et 5^{ème} séries. Paris—O. DOIN, 1900-1901.

SINCE 1896, Professor Raymond has been bringing out reprints of his Friday clinical lectures at the Salpêtrière, the fourth and fifth volumes of the series now lie before us. Like all the publications of world-famed school of neuropathology of which M. Charcot was the Coryphæus, these lectures are all that one could wish them to be. The language is easy to read

for a professional man, and the description given of the various cases, their symptoms, diagnosis and treatment, is full and clear.

Among the diseases discussed we may mention these—Chronic superior polio-encephalitis, plumbism, scleroderma, partial epilepsy, juvenile general paralysis, tumours of the Rolandic area—to give a proof that those who meet with an obscure case, may be assured that they will derive benefit from a perusal of what Raymond has to say about it.

We would especially recommend these lectures to all who do, or are likely to, lecture on subjects medical, for they are models of what clinical lectures should be.

Handbook of the Gnats or Mosquitos, 2nd

Edition.—By G. M. GILES, M.B., Lieutenant-Colonel, I.M.S. (ret'd.) JOHN BALESONS AND DANIELSON, London, 1902.

2nd Notice

THE new edition of this book is exceedingly well up to date, and is so far in advance of the old edition as to be scarcely recognisable as the same book.

The first part contains a very large amount of valuable information condensed into a small space, and its careful study may be recommended even to those who take little interest in the purely technical questions of the classification and separation of mosquitos. We may especially note the soundness of the author's views with regard to the connection between mosquitos and malaria, for unfortunately there are still many in India who do not take kindly to the fact that malaria is *only* conveyed by the bite of an infected mosquito. In this connection the remarks on pages 154-155 are particularly appropriate. The whole of Chapter VIII (conditions influencing the prevalence of mosquitos, &c.), indeed teems with useful information and sound opinions.

The chapter on the anatomy of the larva is, in view of recent work, not quite up to date, but this is inevitable in a book which takes long to publish. An important error has been made in the figure of the frontal hairs of *A. Rossi* (Fig. 13) to show differences between the larvæ of some anopheles. Both the median and external frontal hairs of the larva of *A. Rossi* are simple and unbranched (like those of Grassi's drawing of *A. Bifurcatus*), and the author has probably mistaken the larva of *A. Fuliginosus* for that of *A. Rossi*.

The chapter on the anatomy of the adult mosquito shows much original work and will be found very useful. We may, however, take exception to the author's opinion that all previous descriptions of the salivary glands are full of inaccuracies. Possibly he had not seen the excellent description and figures in Mr. Christopher's pamphlet on the anatomy and histology of the adult female mosquito. His method of dissecting

out the glands cannot be said to be the best yet devised, and one is not surprised that by this method he finds their demonstration "the most difficult piece of dissection it has fallen to my lot to attempt"

We cannot agree with Colonel Giles in his opinion that anopheles larvae cannot exist in running water unless the current is very slow, and in his remarks on irrigation canals he quite misses the true point of their influence on the prevalence of anopheles. His opinion apparently is that it is chiefly by the formation of pools in the beds of the canals after the water is cut off, and pools due to overflows, that the danger of these irrigating canals lies. The truth is that such pools are of little or no consequence for it is chiefly, *while the canals are flowing*, that the anopheles breed in them, because the malaria-carrying species in such places as Mian Mu, &c., breeds essentially in running water. After the water has been cut off, very few, if any larvae will be found in the pools that are left. This applies also to the malaria-carrying species in hilly districts such as the Doonars, where it is only in the quickly flowing hill-side streamlets that larvae are chiefly found.

In Part II (systematic) Colonel Giles has followed Mr Theobald implicitly in his classification and descriptions, and in the main the matter contained in this part represents that of the monograph in a condensed form. From the point of view of obtaining uniformity in classification, &c., this is an advantage, but it has the disadvantage also of reproducing in a second book the errors which are inevitable in a new monograph on a subject which is yet in a very elementary stage.

Owing to the large increase in the number of mosquitos which had to be described in the small space at his command, the author has been obliged also to curtail his descriptions of species to such an extent that it would certainly be difficult, if not impossible, to identify many mosquitos from them.

The whole question, however, of the classification and separation of mosquitos is at present in so confused a state, that it is certainly preferable to occupy as little space as possible with descriptions of species which must before long either sink as being synonymous with other species, or come under new genera altogether.

In this connection it is interesting to note some changes which have already taken place since the publication of these two books in the classification and separation of anopheles, changes which are largely due to workers on the subject in India. Thus the proof that the relative position of the transverse veins of the wings is of no value for distinguishing closely allied species, will bring together as one variable species, *A. Rhodesiensis*, *A. Funestus* and probably other members of this group.

The three species, *A. Culicifacies* (Giles), *A. Listoni* (Giles), and *A. Indica* (Theobald), which have caused us much trouble in India, are now admitted by Mr Theobald to be identical. He also regards *A. Maculata* and *A. Theobaldi* as the same (though this, I think, is extremely improbable) and Captain Liston's *A. Listoni* (*Indian Medical Gazette*) turns out to be the same as *A. Fluvialis* (Malaria Commission) and *A. Christophersi* (Theobald).

Thus we have already a marked reduction in the number of species of anopheles.

If we add to this the fact that Mr Theobald is now commencing a new classification of the anopheles genus founded on differences in the characters of the wing and body scales, by which this genus will be subdivided into several new genera and sub-genera, we have a picture which, even to any one who has closely studied the subject, is sufficiently confusing.

S P JAMES

The Roentgen rays in Medicine and Surgery as an Aid in Diagnosis and as a Therapeutic Agent.

—By FRANCIS H WILLIAMS, M D, Harvard with 391 Illustrations. New York: The Macmillan Co., London, 1901, pp 658. Price, 25s net.

THIS is without doubt the most complete book we have seen on the Roentgen Rays and their application in medicine and surgery. The author has worked at the subject since the rays were first discovered with abundant material and first rate appliances at the Boston City Hospital and the Roger's Laboratory of Physics of the Massachusetts Institute of Technology. The results are set forth in the handsome volume before us with a wealth of illustration and detail which excites our admiration and envy. The illustrations are indeed a special feature of the book, and the fact that in the reproduction of the X-ray photographs there has been no re-touching, adds considerably to their value and to our admiration of them. After three chapters on the nature and properties of the X-rays, on X-ray equipment and on the methods of making and recording X-ray examinations, the medical uses of X-rays are considered. The diagnosis of diseases of the thorax, pneumonia, empyema, hydro and pneumo-thorax, emphysema and bronchitis, heart disease and aneurism, new growths, is fully described. The value of the method is nowhere better illustrated than in the records given of cases of early lung tuberculosis where screen examinations revealed tubercle before there were any physical signs, though these developed later in the cases and the diagnosis was confirmed bacteriologically or by autopsy. Diseases of the abdomen and pelvis are not readily diagnosed by X-rays. The therapeutic uses of the rays is skin diseases (lupus, eczema, sycosis, acne, &c.) in new growths (cancer particularly), in rheumatism, and their action on

bacteria are next fully dealt with, and the most recent work in these directions described. Nothing is more remarkable or hopeful than the recent rapid extension of the therapeutic application of the rays. Invaluable as they are for diagnosis they are daily becoming more valuable for treatment of disease. Six chapters are given up to the surgical uses of the rays, one of them—the poorest in the book—being on their use in military surgery. We think that hardly enough stress is laid upon the necessity of X-ray photographs of injuries being interpreted by experts in consequence of the very fallacious appearances often presented. Considerable circumspection, not to say charity, is needed in judging of the results of treatment of fractures, and no opinion is justifiable in the absence of skiagrams taken in different directions at known distances, with a full knowledge of the whole history of the case. In more than one recent trial the 'lawyer' patient and his counsel have discovered that X-ray skiagrams are not always what they seem.

The work ends with chapters on dental surgery, calculi, veterinary medicine, the usefulness of X-ray examinations to life assurance companies and the medico-legal uses of the X-rays, and the examination of foods and drugs.

Dr. Williams and his publishers are to be congratulated on having produced an excellent practical treatise on a therapeutic and diagnostic agent of the first importance. The work is so excellent that, dealing as it does with such a rapidly progressive science, we have no doubt it will see many editions.

The Study of the Pulse, Arterial, Venous, and Hepatic, and of the Movements of the Heart. By JAMES MACKENZIE, M.D. (Edin.), Consulting Medical Officer, Victoria Hospital, Burnley. London and Edinburgh: Young James Pentland 1902. 8vo cloth, gilt top, pp. xv + 332. Price 18s net.

THE author informs us in the preface that he has embodied in this work the results of an enquiry into certain features of the circulation, which has engaged his attention during the past twenty years.

The results obtained are certainly, from the standpoint of the general practitioner, valuable, as the book has been written in the scant intervals of rest which the busy medical man can snatch from his almost incessant rounds, and the methods employed have been those which are within the reach of any practitioner.

The book is divided into three parts.—Part I deals with the arterial pulse and the movements of the heart. In this division a detailed description of the methods employed by the writer is given. At first a revolving drum was employed, but this proved too cumbersome for ordinary use, and practically restricted the applicability of this method to hospital practice, he was there-

fore led to devise what he calls the "Clinical Polygraph," which is a very ingenious adaptation of a Dudgeon or Jacquet sphygmograph. Judging from the numerous excellent tracings contained in the book the outfit has served its purpose admirably.

Parts II and III are taken up with a description of the pulsation in the veins and liver, both of which subjects are treated very fully, numerous illustrative cases, from the authors' practice, being quoted, which are all the more valuable as he has been able to follow the history of the cases for a considerable period.

The views expressed in the book are not at all times in consonance with those of previous writers on the subject, but the author gives his arguments in support of his theories so fully, that his views should command respect.

We can recommend the book to those in search of information on the pulse. The general get-up is excellent, but we wish that Mr. Pentland would cut the pages of his books before sending them abroad in the hot weather.

Current Literature.

OBSTETRICS AND GYNÆCOLOGY

Pregnancy complicated by mitral insufficiency.—Chadwick reports in considerable detail two fatal cases. He thinks that the only proper treatment of such cases is to watch the patient closely from the beginning and when lack of compensation is shown by pulmonary congestion, as manifested by oedema and persistent cough. It is not only justifiable, but one's duty to his patient, to advise and urge upon such an unfortunate mother the necessity of saving her own life by terminating her pregnancy as speedily as possible.—[*Boston Medical and Surgical Journal*, 11th July 1901.]

Hydrotherapy in Disorders of the Menopause.—Goltzschalk recommends hot baths (92° to 96°) as a means of relieving the sweating and hot flushes and associated disturbances occurring at the menopause or after removal of the uterus and adnexa. The hot baths are administered at bed-time (duration twenty minutes). Three or four weeks' treatment was sufficient to effect a cure.—[*Modern Med*.]

Curettage in out-patients.—Boukoemsky gives the results of treating curetted patients as out-patients. Recent abortions were treated when the patients first came, in endometritis, the uterus was stuffed with iodoform gauze and the curetting done next day. Almost half the cases needed dilating to Hegar 9 to 10 to admit the curette. Before the stuffing and before the curetting, the genitals, both internally and externally, were scrubbed with soap in alcohol and then with 1 to 500 formol solution. After curetting, 4 to 5 litres of this solution were run through the uterus and iodine injected (alumnol 2.5, alcohol, tinct. iodi 25). The vagina was then stuffed with weak iodoform gauze. Patients were given ergot in powder (5 to 1 gm), kept in bed with ice on the hypogastrium for some three hours, then sent home and told to lie up for four days and to come back on the fifth. In 1900 Boukoemsky treated 5,593 gynaecological out-patients, 154 were curetted—116 for endometritis, 35 for recent abortion and 3 for diagnosis. Of 116, 102 were completely cured and 14 had some further bleeding, treated and cured by intra uterine injections.

of it too! Eight cases of endometritis after abortion had parametritis posterior, but the curetting did no harm. Even when the tube was finger thick and the ovary as big as a pigeon's egg, no harm followed. From the good results Boukowsky has determined to continue the practice—[*British Medical Journal*, July 19]

K M DAS, M D

REPORTS

ENTERIC FEVER AMONGST BRITISH TROOPS IN INDIA

THE above is the title of a pamphlet recently circulated from Army Head Quarters, India. It is written by Major T. McCulloch, M B, B A M C, now Deputy Director General, A M S, London.

The pamphlet does not purport to be a treatise on the subject, but it very admirably sums up the amount of our knowledge of the prevalence of typhoid fever among British troops in India.

The pamphlet commences by quoting from Morehead's *Researches on the Diseases of India*, 1856, where it is stated that both "typhus and typhoid are unknown in India," though the same volume records two or three cases with characteristic enteric ulceration. Dr Hunter of the 2nd Queen's Regiment in 1842 had described two cases with Peyerian ulceration, but the first cases which were diagnosed as enteric or typhoid were six cases described by Surgeon W. Hurlbut of the 3rd Foot in the A M D Report for 1861. These occurred at Deesa. Surgeon Hurlbut also believed that many cases were overlooked because the "lesions characteristic of it were neither sought for, nor expected." Up to the year 1867, the cases returned as typhoid did not amount to more than 16, and in 1869 the word "enteric" first appeared in the A M D Report. The number of cases returned as typhoid did not reach 100 a year till the year 1871, when 131 cases and 48 deaths were so registered, but it was felt that these only represented a small portion of the real total number of cases, a supposition which is made a certainty when we read of the extremely high death rate which was close on 50 per cent, and even in 1881 is given as 43 per cent. This, as Major McCulloch says, "is sufficient evidence that the real prevalence of the disease has been understated, and Dr Brydon, the well known Statistical Officer to the Government of India pointed out in 1877 that the 'ratio of fever mortality (in the gross) of past years is nearly absolutely identical with that of enteric fever at the present time'."

This however is now ancient history, and those who have read the history of typhoid fever in England will agree that its slow recognition in India was not a whit slower than it was in England (See Prof Corfield's recent lectures).

That there was increased prevalence as well as increased recognition of the disease in India is also clear from the fact that from 1872 to 1883 there was a slow but steady increase in the death rate from all fevers combined. This is a point of importance and worthy of consideration, with regard to the increased recognition of typhoid among natives of India, which has so occupied our columns within the past year or so. For ourselves we have no hesitation in saying that we believe that there has been of recent years a distinct increase in the number of cases among Natives of India, and we do not believe that this is due to increased recognition only, nor even to the increased use of Widal's serum test. It is not only the junior men in the services who are diagnosing enteric fever among natives, but also senior men of long experience, who were equally competent and equally on the lookout for the disease a dozen or twenty years ago.

The admission ratio for British troops for the 10 years 1878-88 was 9.8 with a case mortality of 31 per cent, and for 1889-98 it had much increased to 21 per mille with a case mortality of 26 per cent. The worst years have been 1896 (25 per mille) 1897 (31 per mille), and 1898 (36 per mille), then comes the present satisfactory fall, viz., to 20 per mille in 1899 and 16 per mille in 1900, which however may only be due to exceptional causes, chief among which is the continued absence of frontier wars and the non arrival of new drafts owing to the S. African War. It is also a noteworthy fact that typhoid fever has been much more prevalent always in Bengal and the Punjab than in either Bombay or Madras Commands, this is the more remarkable as typhoid has long been known to be a fairly common disease among natives of Madras.

We now come to the question of case mortality. This has always been very high in India. The mortality has for the last decade of the century been no less than 26 per cent of last cases. This is scarcely likely to be due to the non inclusion of mild cases, for the tendency in Station Hospitals is rather the other way, so that it must be put down, as Major McCulloch says, to the increased virulence of the disease

when it attacks British soldiers in India. This statement is however in opposition to that of Curschmann (Nothangel's *Encyclopaedia*, Vol I, p 384), who states that "geographical and racial differences are insignificant in their influence upon mortality." This opinion is however, somewhat discounted by the fact that Curschmann's great monograph is entirely based upon European experience and rarely if ever makes any allusion to the disease in non European countries. The rate for British troops in India is nevertheless certainly extremely high, for the Hamburg statistics for 10 years for men of the soldier's age (20 to 35) gives a death rate of only about ten per cent in over 1,800 cases.

We now come to a new and original portion of this interesting pamphlet, where Major McCulloch discusses the prevalence of the disease among different arms of the service, a point which we have already noticed—(*Indian Medical Gazette*, May 1902, p 185).

A table is given, which shows that the admission ratio among the cavalry was 40.6 per mille, among the infantry 26, and among the artillery 24 per mille. Artillery however may be either horse or garrison, and if these branches of the Royal Regiment are taken separately the heavy field and mountain batteries are 27 and 23 per mille while among the garrison gunners it is only 15.4. That is, enteric is only half as common among garrison gunners as among horse batteries, and less prevalent among horse batteries than among cavalry, and less common among garrison batteries than among infantry. That this is not a mere accidental coincidence is evident from the fact that Munson points out the same facts for cavalry as compared with infantry in the United States Army.

We looked with interest for an explanation of these figures but Major McCulloch can give no satisfactory explanation. He has, however, established a very important fact, and it is possible that if followed up, a clue to the etiology will be found.

That the disease may attack horses has never been proved, and it is more probable that Major McCulloch is on the right track when he points to the extra liability of cavalry men to drink impure water which might be supplied for them horses. He also suggests that the enteric bacillus may pass through the body of the horse and infect stable litter.

The pamphlet also shows that women (soldiers' wives) are remarkably free from enteric, as are also soldiers' children, though one would expect a considerable prevalence among the latter.

That soldiers on field service are especially liable to enteric fever is too well known and the present report throws no new light on this fact. We remember during the Turkish Expedition it was said (in the newspapers) that cases occurred at distant camps under circumstances, where infection from a former case or place was unlikely, but the present pamphlet has nothing to say on this head.

We have not space to refer to Major McCulloch's remarks upon age and susceptibility, the greater liability of young soldiers is attributed to (1) physiological susceptibility, the "enteric age," (2) special acclimatisation changes, (3) want of experience as to diet, drink, etc.

As regards season, Curschmann states that "everywhere the increased frequency occurs during the late autumn months." There is a remarkable unanimity in this regard as far as Europe and North America is concerned, but the statement must be modified as regards India, and possibly for other hot climates. In Bengal and Punjab enteric is chiefly prevalent in the first half of the year, whereas in Madras and Bombay Commands it is mostly met with in the second half, viz., the season of enteric prevalence in Quetta (Bombay Command) is from July to November. In Quetta it is said that the beginning of the enteric season is marked by dust storms and water scarcity, whereas in Bombay and Madras Presidencies enteric prevalence is associated with the monsoon period. In addition to this it is shown that there are three well marked periods of special prevalence, first reaching its highest point in April or May, a second in August and September and a third in about December.

Over forty years ago Pukes called typhoid a "disease altogether and easily preventable" but neither in India nor England neither in the army nor among the civil population has anything but a very limited success attended the efforts of sanitarians to stamp it out, and Major McCulloch is wisely cautious in drawing a too favourable conclusion from the happy results of the last couple of years.

Those who are aware of the difficulties of tracing the causation of enteric in India have often smiled at the well meant efforts of critics in England to point out how easy it all is. Such criticisms remind us of beliefs of the enthusiastic young missionary (while in London) who thinks that all India or China could be "converted" if one only went the right way about it but whom a few years of experience of the East and its peoples too surely disillusioned. The disease is endemic in Indian cantonments and we are seldom able to trace any direct connection between the cases, just as the Health Officer at home is unable to show why a case should occur in one house or one street and not in another. In fact, as

we have before urged, the water theory will explain sudden and great outbreaks, but it will not always explain individual cases, nor will it explain the persistent mild prevalence of the disease, and the same remark applies to cholera and dysentery, as well as to typhoid, and it is time that sanitarians recognised this fact.

Major McCulloch inclines to the view that infected urine is a common means of spread, as may be easily understood. We note too that he is of opinion that soil pollution is a potent factor, and he regards with suspicion the shallow trench system of disposal of excreta. Personally we incline to this belief and think that it is impossible to ignore (as certain writers in the *British Medical Journal* do), the possibility of the germ being conveyed in the dust from the soil. We are glad to see that Major McCulloch also calls attention to direct infection by soiled hands and soiled clothing. The connection between preliminary diarrhoea and typhoid is also rightly insisted upon, much could be said on the necessity of the soil being prepared for the typhoid bacillus. Our author's remarks on water are eminently practical and sound, as a matter of fact, if water played in India as important a part as it does in the etiology of cholera we should before this have seen a marked reduction in typhoid cases, as there has been a marked reduction of recent years in cholera prevalence among British troops.

Major McCulloch makes out a good case in favour of the importance of dust and flies as agents in the spread of typhoid in India, and we believe that it is a narrow view of the etiology of the disease which will exclude such factors. As regards the question of typhoid among Natives, it is shown that "Native contamination" has been very often invoked as an explanation of typhoid infection in barracks, but unless the Native of India is pretty commonly a host of the typhoid bacillus, it is evident that such an explanation amounts to very little. Now, though we believe that the Native of India does suffer from typhoid, he certainly suffers much less proportionately than the European in India, and at times when numerous cases of typhoid are lying in the Station Hospital for British troops, it is not uncommon to see the Native regiment entirely free from the disease or with only a single case or so, but, as Major McCulloch says, if the Native does not freely suffer from typhoid, either the phrase "Native contamination" has been too freely used or the view that "coliform organisms normally present in the intestines can under certain conditions take on virulent or pathogenic characters," must be correct.

We must now conclude. We commend this admirable pamphlet to the attention of our readers. It is an able resumé of the facts of the case, and if it has not pointed out the causation of enteric in India, it at least has shown that the causation is by no means the simple thing those enamoured of the (exclusive) water theory would have us imagine, and it also has recorded for us the persistent and well-directed efforts of the Military Medical Department towards the abatement of this disease, which has increased even in Europe of recent years and still defies to a large extent all the efforts of the sanitarian in Europe.

THE MADRAS MATERNITY HOSPITAL

IN one respect the Madras hospitals have an advantage over those of other provinces, in that they publish annual reports on the working of the institutions and so enable the profession to know something of the vast amount of good work done in them. The medical officers of the great Government hospitals in other provinces have the same trouble in writing these reports, but as these seldom or never emerge from the pigeon holes of the office of the administrative medical officers, little or nothing is generally known of the work done in them.

The vast amount of obstetric and gynaecological work done in the Madras Maternity Hospital is indicated by the following figures,—total cases, 3,920, of which 2,174 were deliveries in hospital and 1,603 gynaecological cases treated.

Lieutenant-Colonel Sturmer, I.M.S., the head of this Institution, divides the 2,217 obstetric cases as follows—Natural, 1,533 difficult (including 'tedious' and 'laborious'), 137, pretermatural, 48 (including inverted, transverse and compound presentations), complex 370, which includes plural births (twins 33 out of 2,217), retained placenta, convulsions, rupture of uterus (5 cases), descent of cord, general diseases and injuries. The number of abortion cases was 79 out of 2,217.

Of the 257 obstetric operations all varieties were performed, including 99 forceps cases, 19 of podalic version, 33 of cephalotripsy, six of decapitation, one caesarian section, and one abdominal section for rupture of the uterus. The period of greatest fecundity was from 20 to 24 years of age. Of the 1,533 natural labours, there were nine cases under 15 years of age, and only four over 40 years. In the vast majority of cases the hours in labour was over six hours. Out of 48 pretermatural labours all the mothers recovered, and 31 chil-

dren, 18 children being stillborn. Of the complex labours (35 cases) 30 mothers recovered and 20 children. Plural births only occurred once in 65 labours or less than the average. Placenta previa occurred seven times. Puerperal eclampsia occurred 25 times, nine of these cases in women of 16 or 17 years, and sixteen of the cases occurred in primiparae, the mortality of the mothers was 9 or 36 per cent, five of them having been moribund on admission. Saline injection and morphia were the most hopeful methods of treatment, but many seemingly hopeful cases went from bad to worse. Many of the cases had several fits of convulsions before being brought to hospital.

The number of cases of sapriemia and septicæmia was 63 or 2.8 per cent, of these 31 were sapriemic and 32 septicæmic, eighteen died of the latter and none of the former. So many of these cases were examined outside hospital by the ignorant midwives that the wonder is that these cases are not more common. The routine practice of vaginal douching was discontinued during the year, and this has not led to any increase of septic disease. All cases, however, who have been examined outside are given the douche. The sex proportion of children was slightly in favour of the males. There were only nine cases of ophthalmia neonatorum, only one of which was severe.

The proportion of forceps cases this year was 1 in 215 or considerably less than that of former years, of gynaecological operations there were 61 abdominal sections, 4 hysterectomies, 60 operations on the uterus, 15 on the pelvic tissues, 90 plastic operations, and 16 operations on vagina and vulva, there were also 4 operations on infants for imperforate anus.

We note that Lieutenant Colonel Sturmer does not agree with Professor Loeffler that carcinoma is a rare disease in malarial countries, there have been 104 cases of carcinoma during the past five years in this hospital, including seven of breast, 84 of uterus, two of liver, nine of ovaries, and six cases of sarcoma.

The whole report is one of interest and clearly shows the large amount of good work done in this excellent institution. Lieutenant-Colonel Sturmer, I.M.S., is to be congratulated on the flourishing condition of the Madras Maternity Hospital.

Correspondence.

THE PELLAGROUS AFFECTIONS OF THE SKIN IN NORTH BEHAR

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—The following account may prove of interest and may call for increased attention and observation amongst Indian Medical Officers.

During my short stay in one of the districts of North Behar, I have had occasion to notice several cases of pellagrous affections of the skin.

It came to notice first in 1900 in Saran. But I regret to note I have not had sufficient opportunity to complete my observation. What I have noticed I now record so that some one may add the benefit of his labour and assistance to the identification of the disease and to ascertain how far it affects the peasantry of the districts of North Behar, Patna, Muzaffarpur, Champaran, Saran, Daihanga and also of Balia and Gorakhpur, the neighbouring districts of North Western Provinces.

I had noticed several cases (in 1900) in the out-door dispensary room who had been troubled with a burning of the skin in the hands and feet and the appearance of a red rash on the skin. The red spots were at first painful and had a tense feel and the skin remained rough and dry.

Symptoms of digestive disorder as diarrhoea were frequently complained of. Tongue generally was dryish and red. But no special symptom relating to the nervous system were noticed, excepting local hyperæsthesia of skin.

The cutaneous symptoms were apt to come and go at first, but gradually these remained and became fixed.

No granulomatous or nodular growths (which would raise any suspicion of leprosy) could be detected at the spots in the skin and around the nerves.

Yours, etc,
U RAY,
Assistant Surgeon,
Uluberia

ULUBERIA, DISTRICT HOWRAH
28th May 1902

THE TREATMENT OF HYDROPHOBIA.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—In the May number of the *Indian Medical Gazette* there is the report of a case of hydrophobia treated by the

leaves of *Acacia Arabica* In relation to this the following may be of interest—

Two weeks ago a man, about 40 years of age, came under my care saying he had been bitten a short while before by a mad dog, and presenting exactly similar symptoms and signs to those of the case described by your correspondent. The patient was emaciated had a fixed terrified expression, he cried out sharply in a 'barking' fashion at sight of water or when any one advanced to touch him, made biting movements, profuse saliva trickled from his mouth, he was very restless, sat generally in a stooping posture with his hands on the ground and had not slept at all the night before I saw him. A history of a week's illness was obtained. There was no fever.

The whole was a perfect picture of hydrophobia as it is in the popular imagination, but sedative and suggestive treatment has altered matters in such a way that at this time—14 days later—the only complaint is that of a litter of puppies gnawing at the man's intestines, these I hope will too go away and leave the man in a healthy frame of mind.

I venture to suggest that the case referred to as cured by *Acacia Arabica* (*Babul*) was of a similar kind and that we must still consider the real disease when once developed as hopelessly incurable.

Yours, etc

A COCHRANE, M.D., F.R.C.S.,
Captain, I M S

[This is a probable explanation of the supposed action of *babul*. Rabies like snake bite can be mimicked without conscious deception, owing to the effect of the dread of the disease on the patient's nervous system. We remember a case where the symptoms of snake bite were very completely mimicked by a sepy and rapidly 'cured' by a hypodermic of plain water. This nervous mimicry is itself worth study. If any of our readers has any evidence in favour of *babul* we shall be glad to publish it.—Ed., I M G.]

"THE CAUSATION AND PREVENTION OF MALARIAL FEVERS"

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—In thanking you for your kind notice of my pamphlet on malaria for the use of Hospital Assistants and Civil Assistant Surgeons, I should be much obliged if you would kindly correct the impression which appears to exist that the pamphlet is one of the new series of 'Scientific Memoirs'. It has no connection, so far as I am aware, with the Scientific Memoirs, and its sole object is to place before Hospital Assistants, in as brief and easily intelligible a manner as possible, the main facts regarding malaria. Its origin lies in the fact that it was found quite impossible in the space of a short circular (such as the circulars which have been issued from time to time by Sanitary Commissioners for the use of Sanitary Inspectors and others), to embody all the information regarding this subject, which every hospital assistant should know.

I am,

Sir,

Yours, etc,
P JAMES,
Captain, I M S

LAHORE,
May 10th, 1902.

THE LIST OF QUALIFIED MEDICAL PRACTITIONERS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The republication of the list of qualified medical practitioners, which was for the first time published by this office last year, is under consideration. In order that the second publication may be complete and up to date, may I ask you to kindly insert an article in the next issue of your journal suggesting to qualified medical practitioners, whose names have not been entered in the last publication, to register their names for insertion at once, and those whose names and qualifications have been incorrectly inserted to submit the necessary corrections.

Applications for the insertion of new names or for the correction of inaccuracies, &c., should, if the applicant be a resident of Calcutta, be made direct to this office, and if he be a resident in the mofassil, to the Civil Surgeon of the district in which he resides.

I have the honour to be,
Sir,

Your most obedient servant
G BOMFORD, M.D.,
Lieut. Col., I M S,
for Inspector General of Civil
Hospitals, Bengal

CALCUTTA,
21st May 1902.

NOTES ON THE HYPODERMIC INJECTION OF QUININE IN MALARIAL FEVERS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The ordinary treatment of malarial fevers by quinine given by the mouth, is almost universal in India, the general tendency being in favor of smaller doses but perhaps, the hypodermic use of the drug as a routine treatment has not been tried as much as it deserves.

This method, besides other advantages, does away with the unpleasant taste, and is supposed to obtain the full benefit of the physiological effects of the drug. Surgeon Lieutenant Colonel Benson, I M S,¹ in December 1891 at Calcutta, reported very favourably on this method of administration in malarial fevers. After an experience of 1,330 cases, in 614 of which he had no untoward result whatever, such as tetanus, abscess, sloughing, etc., he found one injection containing five grains of the sulphate, dissolved in water with the aid of hydrochloric acid frequently sufficient. In dispensary practice he considered this method highly economical and effectual. I have tried this solution but have found it too irritating. Blum,² a French army surgeon, speaks very highly of the hypodermic use of quinine. He employed a solution of the hydrochlorate (45 grains) and Antipyrin (30 grains) in 1½ oz of distilled water. Manson,³ in referring to this method of treatment, recommends the intramuscular injection of quinine deeply into the scapular or gluteal muscles in severe cases of malaria, with gastric or cerebral symptoms, where life is in imminent danger, and where the "earliest possible action of the drug is of importance." He recommends the acid hydrochlorate (five parts, water ten parts) H P W Barrow, R A V C,⁴ has reported favourably from South Africa on this method of treatment in military practice. He uses the bihydrobromate of quinine. Ferguson,⁵ of Cheltenham, has given his experiences of this method, first referred to by him in his 'address on medicine,' delivered at the annual meeting of the British Medical Association held at Cheltenham in July 1901. He used it in the treatment of all cases of chronic malaria in patients returned from the tropics, &c. He has tried it in 100 cases, so far without a failure. He recommends three grains of the bihydrobromate of quinine dissolved in 20 minims of pure water.

French and Italian physicians, apparently, have used this particular method of treatment at home and abroad for years.

Manson,⁶ remarks that, "in the malignant fevers of Rome as much as a drachm of quinine, divided into three or four doses, is sometimes administered in this way in the course of twenty-four hours." Bacelli,⁷ in "malaria comatosa" injects as much as fifteen grains, at one time, into a vein.

This modification of the hypodermic method may be an improvement as the similar use of mercury in syphilis has been found to be. I have no experience of it. Binz⁸ has recommended quinine hypodermically in the treatment of malaria in children.

The fear of tetanus, referred to by Manson, which has caused this method to be regarded with suspicion in the past, should not operate in the same way at present. In these days of antiseptics, when medicines and serums (antitoxins) of all kinds are used in this way all over the East, on Europeans and Natives alike, without any bad results (as regards tetanus) the bugbear of tetanus must be dropped. Tetanus may be produced by the introduction of the tetanus bacillus on a dirty needle, or in a foul solution, but not by quinine.

I have tried this method of treatment for several months past with considerable success in camp, quarters, and on the march. I consider it safe, rapid, almost painless, economical, and especially suitable in military practice. I use a solution of gr. xxx of the bisulphate of quinine (soluble sulphate) dissolved in 2½ oz of cold distilled water with the aid of gr. i of tartaric acid. The dose of this solution is fifteen minims, containing 3 grains of the alkaloid. This solution is very slightly irritating, and does not cause redness of the skin.

It should be prepared in a test tube and after the quinine has been dissolved in the cold, the solution should be boiled, and the tube sealed with a cap of india-rubber. The needle should be sterilized in the flame of the spirit lamp before introduction into the test tube, and again, immediately before use. The injections should be given in ordinary cases of fever during the premonitory or cold stage, if possible and in chronic cases at any time. Once a day will often be found

1 Trans. First Indian Medical Congress 1890.
2 Journal des Prat. March 21st 1896.

3 "Tropical Diseases" 1900 page 13.

4 British Medical Journal January 25th 1902

5 Ibid, February 22nd 1902

6 "Tropical Diseases" 1900 page 135

7 British Medical Journal February 22nd, page 430 and Tropica

Diseases page 137

8 "Year Book of Treatment" 1897 p 273

9 Deut. Medical Woch., September 3rd, 1896

sufficient, but the injection may be repeated if necessary, or two injections may be given at one time.

The best site I have found to be the lax subcutaneous tissue of the buttock. A little hardness at the site of injection generally remains for a few days but little or no tenderness in the great majority of cases. The danger of abscess, sloughing, etc., is next to nil if the proper solution is used, and strict attention is paid to having the solution, syringe skin of the patient and hands of the operator aseptic.

The bisulphate, hydrobromide, bichlorate of quinine and urea, and other suitable salts for hypodermic use, may be obtained either plain or in tablets, in India. So far, I have not been able to obtain the bihydrobromide. Solutions made from hypodermic tablets should in all cases be boiled before use.

The advantages claimed for this method may be briefly summarised as follows—

(1) That it is more certain in its action than pills, powders, or mixtures given by the mouth, the drug entering the blood and coming into contact with the parasites (if any exist) almost directly and not being decomposed by the secretions of the stomach and intestines.

(2) That it is particularly useful in anæmic and debilitated subjects when dyspepsia and sickness is present, and does not interfere with other medicines being given by the mouth at the same time.

(3) That it is of special service, as pointed out by Dowler, in malaria of acute types and in black water fever, where intense vomiting and straining make administration by the mouth or rectum entirely out of the question. It is also the best way of giving quinine in comatose cases.

(4) That it is economical, a small number of three grain injections once a day being usually sufficient and having the same effect as 20 or 30 grains given by the mouth.

(5) That in many cases it is successful when the drug given by the mouth or rectum has produced little or no effect upon the disease.

(6) That it can be used when quinine by the mouth produces headache, tinnitus, giddiness, etc.

JUBBULPORE, C P

Yours, etc

May 29th, 1902

K BRUCE BARNETT, M B,

Captain, R A M C

(We believe that the hypodermic method is nowadays very largely used in India, we have used it freely for many years past, and it is especially of value in the æstivo autumnal cases so commonly met with in Upper India after the rains.—Ed., I M G)

THE PROMOTION OF SPECIALIST MEDICAL OFFICERS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I was informed the other day that a doubt exists in the minds of certain officers of the Indian Medical Service employed in bacteriological and similar special work as to whether they are eligible for promotion to Colonel's rank and its corresponding administrative duties. I cannot bring myself to believe that such a doubt has any basis in fact, but it is certainly necessary to ascertain clearly whether there is any truth in the idea. Some of our ablest P M O's, like the late D G, Surgeon General Harvey, and Colonel Brantfort, have been for years in charge of highly specialised institutions, such as Maternity Hospitals, Eye Hospitals, etc., and many more who are Chemical Examiners, etc., have no reason to suspect that they will be considered unfit or unsuitable for promotion on account of their being specially selected and capable officers.

This being so, it is in the highest degree important that men appointed to undertake laborious and skilful work in laboratories, on a by no means princely scale of remuneration and without private practice, should not be left in any doubt as to the chances of their promotion. I feel sure you will agree with me that any attempts to interfere with the legitimate prospects of these officers will result in widespread discontent, and will react most disastrously on the efficiency by the service and upon the progress of medical science in India. I trust, therefore, that this letter will be the means of securing an authoritative and unambiguous pronouncement by the authorities concerned, with a view to allaying the present uncomfortable feeling, which is current amongst the officers above alluded to.

I am, etc.,

MICROBE

(We understand that a Medical Officer on furlough recently submitted this question to the India Office, and was informed that the holding of his specialist appointment shall be "no bar to promotion to Administrative Rank.—Ed., I M G)

WHY THIS GREATNESS THRUST UPON US?

MY DEAR SIR,—Would you kindly favour me with a copy of your full size photograph to be placed in my Picture Gallery in Bombay at Pardo Castle. To say the least, the gallery is the most extensive and splendid ever seen in India. It contains photographs of almost all well known and renowned men of different nationalities. Your photo, I may assure you, will find a very prominent place in the gallery and will be very thankfully received.

Hoping to be excused for the trouble,

"BIRAMJIE HOUSE,"
Matheran, 29th April, 1902

I remain,
Yours truly,

BYRAMJIE JEJEEBHOO

(The above letter has been received by a Civil Surgeon in Bengal. Why he or any one else should be asked to send their photograph to adorn this person's house we fail to see.—Ed., I M G)

THE NON RECOGNITION OF ENTERIC FEVER AMONG NATIVES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Till the last few years, the occurrence of enteric fever among Natives was denied. By some it was supposed that all or most of them suffered from the disease in early life and thenceforth were immune. Nowadays the frequent occurrence of the disease in adult natives becomes almost daily more established. Not long ago I wrote that I had never seen a case in a Burman, during the last two or three years I have met with several, some of which have been verified by *post mortem* examination. The other day Maj A O Evans, I M S, Civil Surgeon of Moulmein wrote,—saying "Typhoid is perfectly common among all classes of Natives. I had a case of typhoid a year ago in a young Burman, with death from perforation, and, in a fatal case (Burman) in the jail here, the diagnosis was amply verified by *post mortem*, the ulcers were typical." Capt Rost, I M S, has now under his care a Burman Medical student, who is convalescent after an attack attended with a severe relapse. Capt Rost's patient developed an abscess in the parotid region. I can call to mind several cases of obscure protracted fever developing, towards the fatal termination, swelling and abscess in one or both parotid regions, which I now think were probably cases of enteric fever.

Among the reasons for the non recognition of enteric among Natives the following may be mentioned

(a) The tendency to regard all cases of fever among Natives as due to malaria.

(b) The obscurity of the symptoms. In many cases among Europeans the symptoms are quite obscure and such would seem to be even more frequent among Natives.

(1) The fever is very frequently quite irregular and not typical. The pernicious custom prevalent in India and Burma among Hospital Assistants and Ward Attendants of taking temperatures in the axilla has, I believe, done much to prevent the recognition of the disease.

The Medical Officer at his morning round has found the morning temperature recorded as normal, whereas if it had been properly taken in the mouth or rectum it would have been found considerably raised. How this custom arose it is difficult to say whether it was due to the teaching of the officers responsible for the training of hospital assistants, to the laziness of the hospital assistants or to the prejudices of the patients. At any rate it is a thing to be corrected and a methodical washing of the thermometer should ever come any prejudice on the part of the patients.

Some years ago there was an order in force that all casualty reports of Native soldiers dying from febrile diseases should be accompanied by a temperature chart, the idea apparently being to enable the authorities at Head Quarters to criticise the diagnosis and decide whether or not some of these deaths were due to enteric fever. When it is remembered that these charts were in most cases compiled from records taken more or less carelessly by subordinates in the axilla, there is little wonder that the order was found useless and was countermanded.

(2) Typical diarrhoea is in my experience quite uncommon among Natives, and not so common among Europeans as in London.

(3) The rash is seldom detected in Natives, but I cannot help thinking that a daily methodical search would render its detection more frequent.

(4) The slight enlargement of the spleen is a symptom of little use among Natives.

(5) The cough I consider a very valuable sign among natives. It is of very frequent occurrence and is peculiarly troublesome and often attended with considerable pain in the chest, and is quite out of proportion to the physical signs which are usually only a few soft mucous râles, and to the expectoration which is only a small quantity of frothy

mucus Occasionally, and these cases are frequently fatal, symptoms of pleurisy and pneumonia develop

A good many officers in the Indian Medical Service will remember epidemics which occurred in 1892 and 1893 in the cantonments of the Punjab Frontier and in the camps in Waziristan These epidemics were returned as influenza. Many of the cases were characterised by irregular fever (the records probably as a rule taken by hospital assistants and ward orderlies in the axilla) and troublesome cough with very slight physical signs in the lungs, unless, as happened in some cases, pleuresy or pneumonia supervened The cases lasted two, three, four or more weeks and the mortality was high I believe now that these were epidemics of enteric fever Had they been influenza, more persons should have been attacked, and the mortality should not have been so high

(c) Further I consider that the action of Commanding Officers of Regiments has contributed more than anything else to the non recognition of the disease A *post mortem* examination in a Native Regiment (Ghoorkha Regiments alone excepted) is, or at any rate used never to be made, the Commanding Officer always replying to the entreaties of the Medical Officer that such a thing would spoil recruiting The Commanding Officer might often exercise his authority and persuasion with benefit to medical science, to public and private health, and towards eradicating not harshly, but by slow degrees, the prejudices of the Natives, which are so inimical to progress, and which the powers that be seem instead to foster The newly arrived Indian Medical Officer thus has no opportunity of assisting his diagnosis by *post mortem* examination in obscure cases He has no opportunity of contravening the dicta of his predecessors

(d) The Influence of the teaching of our predecessors It is sufficient to remark on how long it has taken us to shake off this influence and how the evil that men do lives after them

(e) In conclusion the manifold duties heaped on the head of the Civil Surgeon in a trying climate have left him but little leisure and energy for pathological research It will be remembered how the Civil Surgeon gained at once the sympathy and the sneers of a late Editor of the *British Medical Journal*, though it is difficult to understand how he deserved both

O DUER, M.B., F.R.C.S.,
Captain I.M.S.

WANTED A GOOD HAIR DYE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I shall be much obliged if some of your numerous readers can tell me of a good and permanent black hair dye made from inexpensive material easily obtainable in the Punjab I have been repeatedly asked for such a prescription, but find that all the usual country made black hair dyes produce only transitory effects

Yours faithfully

"X"

April 11th, 1902

INVOLUNTARY IRIDECTOMY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In the contributions to the *Indian Medical Gazette* for March on "Involuntary Iridectomy" one cause has been lost sight of and thus I think, is the most important cause which produces the riding over of the iris on the knife In doing a cataract extraction, you fix the eyeball and tilt it a little downwards by holding the conjunctiva just below the lower margin of the cornea with the forceps in the left hand if you are operating on the right eye. You then proceed to introduce the knife with the right hand During the introduction of the knife and the formation of the section the operator's eyes are fixed on the knife and he forgets the forceps and the left hand for a time, and very often unconsciously either pulls the conjunctiva unduly or presses on the eyeball just too much This causes the iris to ride over the knife, the aqueous at the same time escaping rapidly If the forceps and the hand were well arranged and fixed beforehand so as to prevent the pulling or the pressure, the riding over of the iris seldom or never takes place

In eyes with tension occasionally brought on by the instillation of atropine solution before the operation, I have seen the iris ride over the knife

I am, Sir

Yours faithfully,

J R PARVIE, L.M.S.,

Apothecary,

In Medical Charge, Gooty,
Madras Presidency

Gooty,
10th April, 1902

Service Notes

THE following paper appointments appear in *Calcutta Gazette* of April 16th—Captain C R Stevens, I.M.S., on leave, is appointed Civil Surgeon of Bhagalpur, Captain E A R Newman, I.M.S., is appointed to Shahabad, will remain acting at Bhagalpur Major U N Mukerjee, I.M.S., is confirmed as Civil Surgeon of Mymensingh, Major J G Jordan, I.M.S., is appointed Civil Surgeon of Nadia, but remains at Rayshaye, Captain A Gwyther, I.M.S. is appointed to Tippera, but will remain at Durbhunga, Major D M Moir, I.M.S., is appointed Civil Surgeon of Chupra, but remains Surgeon Superintendent, Presidency General Hospital Calcutta, Major F C Clarkson, L.M.S., is confirmed as Civil Surgeon of Chittagong, and Captain W D Hayward, I.M.S., on leave, is appointed Civil Surgeon of Jalpaiguri

MAJOR C R M GREEN, I.M.S., F.R.C.S., Joint Civil Surgeon, Simla, is placed in medical charge of Army Head Quarter Staff and Establishments

COLONEL W E SAUNDERS, C.B., R.A.M.C., is appointed P.M.O., Poona District.

We are glad to see that Captain Smith, I.M.S., has been appointed to assist Major Semple, R.A.M.C., in the Kasauli Pasteur Institute

CAPTAIN C A JOHNSON, I.M.S. 3rd Madras Lancers, is granted one year's furlough on medical certificate

LIEUTENANT COLONEL J A NELIS and Lieutenant-Colonel D Basu, I.M.S., retire from the service in July They both entered in March 1877

THE services of Major H M Morris, I.M.S., are replaced at disposal of Military Department on the expiration of his leave

THE services of Captain F D S Fayrer, I.M.S., are placed permanently at the disposal of the Madras Government.

LIEUTENANT W C LONG, I.M.S., Medical Officer in charge of the Detachment of Infantry at Port Blair, acted as S.M.O., pending the arrival of Captain E E Waters, I.M.S., appointed to act for Major A R S Anderson, I.M.S., granted fifteen months combined leave

We note that in the distribution of *balla* for the China Expedition (*Gazette of India*, April 5th), a Colonel I.M.S., is graded with Colonels on the staff and receives 40 shares while Regimental Colonels and Lieutenant-Colonels receive 32 shares

MAJOR S E PRALL, I.M.S., has been granted nine months combined leave from 16th February

MAJOR H W ELPHICK, I.M.S., has been granted furlough on medical certificate for one year and nine months

MAJOR A WILLAN DAWSON, I.M.S., holds civil medical charge of Roorkee in addition to his military duties

MAJOR O MACTAGGART, I.M.S., officiating Inspector General of Prisons, U.P., is confirmed in that appointment *vice* Colonel G Hall, F.R.C.S., I.M.S., appointed P.M.O. Lahore district.

LIEUTENANT COLONEL BATP, I.M.S. Inspector General, Prisons, Punjab, has been made a C.I.E.

HON. LIEUTENANT W MARCHANT, I.S.M. Dept., is appointed to act as Assistant to Civil Surgeon, Lucknow

LIEUTENANT MACK WALTER MANUK, M.B., I.M.S. has been permitted to resign the service He entered in July 1899

MAJOR T C MOORE, I.M.S., has been permitted to resign the service He was medical officer, 2nd Madras Infantry, and has recently been on Field Service in China He entered in March 1889

MAJOR C E SUNDFF, M B, I M S, Civil Surgeon of Gaya, has been granted furlough for 21 months and Captain Chatterton, I M S, acts in his place

The Gya Pilgrim Hospital has been very much improved under Major Sunder's care, and is one of the best hospitals for surgery in Bengal

DR V L WATTS is confirmed as Civil Medical Officer of Bankura. Hon'y Captain C A Williams I S M Dept., is confirmed as Civil Medical Officer of Balasore, Dr U C Mukerjee is confirmed as Civil Medical Officer of Birbhum, Dr K B Narayan is confirmed as Civil Medical Officer, Pubna and Hon'y Lieut. I G Fleming is appointed Civil Medical Officer of Malda, but will continue to act at Tippera

THE services of Military Assistant Surgeon W J Masterton are placed at disposal of Bengal Government for Civil employment

MAJOR W B BANNERMAN, I M S, has been permitted to return to duty and was granted an extension of leave for eleven days

MAJOR M A T COLLIE, M B, I M S, is appointed Civil Surgeon, Dharwar

DR. D G DALGADO is appointed to act as Civil Surgeon, Sholapur

THE services of Captain F O N Mell, M B, I M S, (Madras) are placed permanently at the disposal of the Central Provinces

CAPTAIN W H KENRICK, I M S, is appointed to officiate as Civil Surgeon, Bilaspur

LIEUTENANT COLONEL D G CRAWFORD, M B, I M S, has gone on leave for 1 year 5 months and 8 days on 5th June from Hoogly. Lieutenant-Colonel Crawford's medico topographical History of Hoogly is now in the press, and will be a very interesting volume.

CAPTAIN P K CHITALE, I M S, is appointed Civil Surgeon of Bhandara

LIEUTENANT S A. RUZAK, I M S, officiates as Civil Surgeon, Raipur, during the absence on leave of Captain P F Chapman, I M S

THE leave granted to Captain E R Parry, I M S, is extended to 18th September 1902

LIEUTENANT COLONEL W A. MAWSON, I M S, is appointed P M O, Malakand Force, and Lieutenant Colonel C H Swayne, D S O, R A M C, appointed to be P M O, Peshawar District

THE services of Captain T A O Langston, I M S, are replaced at the disposal of the Military Department.

THE services of Captain G Hutcheson, M B, I M S, having been placed at the disposal of the Government of the United Provinces he is appointed to act as Deputy Sanitary Commissioner *vice* Captain Fullerton granted 3 months' leave

CAPTAIN T W A FULLERTON, I M S, has had a very trying time in fighting plague in Allahabad, and we are glad to see that the Municipality of that City have passed a resolution thanking him for the work done

LIEUTENANT D H F COWIN, I M S, joins the Punjab for Civil employ

LIEUTENANT W F HARVEY, I M S, has been detailed for plague duty in the Punjab

THE services of Captain J Fisher, I M S, have been placed at the disposal of the Foreign Department.

MAJOR J M CADDELL, I M S, has been granted forty days' privilege leave from 12th May

OWING to the promotion of Lieutenant-Colonel J P Greany, I M S, to the P M O, Aden (*vice* Lieutenant-Colonel Wilkins, I M S, on special duty in South Africa), Lieutenant-Colonel W G H Henderson, F R C S I, is appointed (*sub pro tem*) Civil Surgeon of Poona

MAJOR J G HOJEL, M B I M S, acts as Presidency Surgeon (2nd District) and Marine Surgeon in addition to his own duties as Surgeon to the G T Hospital, Bombay, during the absence of Lieutenant Colonel R J Baker, I M S, on leave

CAPTAIN T JACKSON, I M S, acts as Superintendent of Colaba Asylum in addition to his own duties as Resident Surgeon, St. George's Hospital, Bombay

MAJOR M A T COLLIE, M B I M S, is appointed (*sub pro tem*) Presidency Surgeon, 3rd District, but during his absence on leave till 23rd June 1901, Major J P Barry, I M S, will continue to act as Presidency Surgeon

LIEUTENANT COLONEL NAHMAN I M S, is appointed (*sub pro tem*) Civil Surgeon of Nasik *vice* Major Collie

CAPTAIN S H BURNETT, M B, I M S, has taken over Medical charge of the Central Prison, Hyderabad, Sind

THE Services of LIEUTENANT T G N Stokes, I M S, are placed temporarily at the disposal of the Central Provinces

CAPTAIN J G F MURRAY, I M S, was employed on famine duty under the Bombay Government from 28th February, till 31st April 1902

CAPTAIN F A SMITH, I M S, is posted as Agency Surgeon in Alwar

THE following Assistant-Surgeons are promoted to 1st Class, *viz*, C A Owen, F R C S, (ED), A R Paterson, D S Ollenback, F G Fox, T W Minty, A A Colton, G W Davies, D R. Davies

CAPTAIN C HODSON, I M S, is posted to the Medical Charge of 2nd (Q O) Rajputs

LIEUTENANT COLONEL Z. A. AHMED, I M S, will, it is said, shortly retire from the service. He has been for many years Medical Officer, 28th Punjab Infantry, and entered the service in October 1872

MAJOR K. PRASAD, I M S, has been granted one month's privilege leave

LIEUTENANT COLONEL J B GIBBONS, I M S, on return from leave became Civil Surgeon of Howrah

CAPTAIN T H FOULKES, I M S, has been granted three months' privilege leave up to 5th June

CAPTAIN T E WATSON, I M S, has six months' combined leave up to 14th October next

CAPTAIN H ST J FRASER, I M S, got eight months' leave (M C) up to 26th November 1902.

CAPTAIN R. H. ELLIOT, I M S, has leave up to 21st September 1903

CAPTAIN W J NIBLOCK, I M S, has been granted three months' privilege leave from beginning of May

LIEUTENANT COLONEL A J STURNER, I M S, was due to return to his post as Professor of Midwifery, Madras, on 12th June

LIEUTENANT COLONEL H ALLISON, I M S, returns to Madras, on 5th August 1902

LIEUTENANT COLONEL A G O'HARA, I M S, is due to return from furlough on 4th July

WE much regret to record the death of Captain William Carr, M B, I M S, from injuries received in a fire in the mess of 6th Bengal Light Infantry at Meerut. Captain Carr entered the service in January 1895, he was an M B, O M, of Edinburgh 1893, and was appointed Medical Officer, 6th Jats, in December 1899

CAPTAIN G RAMSAY, I.M.S., recently died of fever in Baghdad, Turkish Arabia, where he was Residency Surgeon. He entered the service in July 1894, and had been House Surgeon at King's College.

SURGEON GENERAL LIONEL D SPENCER, C.B., who retired from the service on 16th June 1902 on attaining the age of 60 years, entered the Service as Assistant Surgeon on 31st March 1865 the same day as the late Director General Robert Harvey. He was promoted Surgeon, 1st July 1873, Surgeon Major, 1877, Lieutenant Colonel, 1885, Brigade Surgeon 27th January 1889, Surgeon Colonel, 24th October 1892, and Surgeon General, 25th October 1898.

He served in the Waziristan Expedition of 1894 as P.M.O. (Medal with clasp and C.B.), but spent most of his career in civil employ under the Foreign Department, in the Central Indian Horse at Bharatpur, and as Residency Surgeon and Administrative Medical Officer, Rajputana at Mount Abu. He was a brother-in-law of the late Surgeon General R. Harvey.

COLONEL C. H. JOUBERT, F.R.C.S. I.M.S., who has been appointed Inspector General of Civil Hospitals in the United Provinces, has had a successful and distinguished career. He entered the service in March 1872, and was for many years a Civil Surgeon in Bengal. He succeeded the late Surgeon General Harvey as Professor of Midwifery and Obstetrics in Calcutta, and was widely known as a successful surgeon and operator.

He recently officiated for Surgeon General Spencer as P.M.O. of the Punjab Army, but though offered the appointment of Surgeon General, Punjab Command, we understand that he preferred to take his present civil appointment which his long experience as a Civil Surgeon eminently fits him for.

LIEUTENANT COLONEL Bomford's leave is gazetted on urgent private affairs for six months from 30th May. Major F. J. Drury, M.D., will act for Colonel Bomford as Principal, Medical College, Calcutta.

MAJOR A. E. ROBERTS, I.M.S., on special duty in connection with the revision of the Imperial Gazetteer of India was granted one month's privilege leave.

COLONEL A. SCOTT REID who was recently made Inspector General of Civil Hospitals, Punjab, has been selected for the post of Surgeon General to the Punjab Command, on the retirement of Surgeon General L. D. Spencer, I.M.S.

Surgeon General Scott Reid entered the service in March 1872, and has therefore just completed 30 years service. He will not be 55 years till 4th April 1903. He has seen much War Service, in the Afghan War of 1879-80, the Burma Campaign of the China Lushai Expedition of 1889-90 and the Frontier Expeditions of 1897-98, Relief and Defence of Mahakand Relief of Chakdara, operations in Bajaur and Momund country, mentioned in despatches, medal and two clasps.

He has recently been A.M.O. in the Central Provinces and took much interest in promoting the Nagpur Malania Conference.

COLONEL J. T. B. BOOKER, I.M.S., who has recently been made P.M.O., Punjab Frontier Force, has had a very distinguished military career. Entering the service in March 1872, he served the Jowaki Expedition of 1877-78, the Mashud Waziri Expedition of 1881, the operations of the 2nd and 5th Brigades in Burma in 1888-87, including the Wuntho Expedition, mentioned in despatches, two clasps, the Hazara Expedition of 1888, despatches and clasp, the second Miranzai Expedition of 1891, clasp, the Waziristan Expedition of 1894-95, despatches and clasp, and the China Expedition of 1900 as P.M.O. of the Indian Contingent, medal and O.B. He has since been P.M.O. of the Presidency District.

COLONEL G. O. HALL, F.R.C.S. I.M.S., has been appointed P.M.O., Lahore Command. Colonel Hall served for many years in the Jail Department of the United Provinces, and was especially well known as Superintendent of the Central Jail at Naini. While at Naini he started the Allahabad Eye Hospital and acquired a reputation far and wide as an ophthalmologist. His two little books on eye diseases are well known and much read. He was appointed Inspector-General of Prisons, N.W.P. & Oudh, on the retirement of Sir John Tyler, and more recently was appointed A.M.O., in the Central Provinces. He was educated at Guy's Hospital and took his F.R.C.S. in 1894. He has had no war service.

MILITARY ASSISTANT SURGEON L. J. O'REILLY has been granted three months' privilege leave and Military Assistant-Surgeon W. J. A. Hogan, two months and 16 days' privilege leave.

CAPTAIN C. MILNE, Civil Surgeon, U.P., has been granted three months' extension of leave on medical certificate.

LIEUTENANT COLONEL M. D. MORIARTY, M.D., F.R.C.S. I.M.S., Civil Surgeon of Meerut, has been selected for the post of Administrative Medical Officer, C.P. He entered the service in October 1872 so has close upon 30 years' service. He has been in the selected brigade rank since 27th July 1893. Lieutenant-Colonel Moriarty will be 55 on 26th January 1904.

The next officers in Bengal on the list are Lieutenant-Colonel B. O'Brien, M.D., Civil Surgeon of Allahabad, Lieutenant-Colonel Z. A. Ahmed, M.D., I.M.S., Lieutenant Colonel D. Wilkie, M.B., Lieutenant Colonel D. P. Macdonald, and Lieutenant Colonel H. A. McKay, C.L.E., I.M.S.

LIEUTENANT COLONEL O'BRIEN will be 55 on 26th May 1903, Lieutenant Colonel Ahmed, on 19th July 1903, Lieutenant Colonel Wilkie, on 27th June 1904, Lieutenant-Colonel D. P. Macdonald, on 19th December 1903, and Lieutenant-Colonel McKay, on 4th December 1905, Lieutenant Colonel S. H. Brown, C.L.E., on 19th January 1905, Lieutenant Colonel Fullerton, 3rd August 1905, Lieutenant-Colonel E. Marr, 3rd July 1902, Lieutenant-Colonel Bomford, on 18th July 1906.

LIEUTENANT H. D. PEILE, I.M.S., assumed charge of the civil medical duties of Dera Ismail Khan District on 9th April, relieving Lieutenant A. B. Fry, I.M.S.

CAPTAIN E. WILKINSON, F.R.C.S., acts for Lieutenant-Colonel Bamber, I.M.S., as Sanitary Commissioner, Punjab.

CAPTAIN F. O. N. MFLI, I.M.S., is appointed to the executive and medical charge of Jubbulpore Central Jail.

LIEUTENANT D. H. GRAVES, I.M.S., was appointed to act as Civil Surgeon, Raipur, in addition to his own duties as Medical Officer, 20th Madras Infantry, but on arrival of Lieutenant T. S. N. Stokes, I.M.S., who has joined the Central Provinces for civil employ, the latter became Officiating Civil Surgeon.

LIEUTENANT W. F. HARVEY, I.M.S., has passed the Lower Standard Examination on Persian.

LIEUTENANT J. MASSON, I.M.S., has passed the Lower Standard Examination in Urdu.

MAJOR F. W. GEE, I.M.S., 5th B.C., has had his leave extended to 5th January 1903.

MAJOR W. H. E. WOODRIGHT, I.M.S., Civil Surgeon, Aghah, has been granted six weeks' privilege leave from 9th June.

MAJOR P. CARR-WHITE, M.D., I.M.S., is appointed as Agency Surgeon in the Eastern States of Rajputana.

LIEUTENANT COLONEL A. H. O. DANE, I.M.S., Agency Surgeon in Bhopal, and A.M.O. in Central India, is granted combined leave for nine months on medical certificate.

MAJOR A. H. NOTT, I.M.S., M.D., Civil Surgeon of Darjeeling, is appointed Medical Officer Northern Bengal Mounted Rifles.

LIEUTENANT O St J MOSES, L.M.S., has taken over the duties of Civil Surgeon, Kohima, in addition to his military duties

LIEUTENANT A CHALMERS, I.M.S., is appointed to the officiating medical charge, 24th Madras Infantry

CAPTAIN F WALL, I.M.S., has been granted one year's leave (m.c.) from China, where he has been serving with No 2 General Hospital

LIEUTENANT COLONEL W A MAWSON, I.M.S., Captain G H Frost, I.M.S., and Captain W B Turnbull, I.M.S., have been granted one year's furlough

LIEUTENANT J A BARNES, I.M.S., has been granted eight months' leave

LIEUTENANT COLONEL W A MAWSON, I.M.S., late of 11th Bengal Lancers, has been appointed P.M.O., Derajat District.

THE news that pay of the Junior ranks of the R.A.M.C. in India was to be improved and that senior medical officers were to receive charge allowances removes two of the grievances of the Corps against the Indian Government, which, according to the grumblers in the *British Medical Journal* can do no right

Now that the Navy and the Army Medical Services have been improved as regards pay and prospects there remains the question of the Indian Medical Service. As a service on the whole the I.M.S. has not much to grumble at, but it is time to recognise that the grade pay of all ranks needs improvement if only to increase it proportionately to that of the home Medical Service. Just as Staff Corps officers are better paid than officers of British Regiments, so should the Indian Medical Service be better paid than the home and for the same very obvious reasons. The better pay as well as the better professional prospects were always the attractions which drew the best men in the schools into the ranks of the I.M.S. Generally speaking private practice in India is not what it used to be, and this fact should be taken into consideration in settling the rates of pay in the service

CAPTAIN R BAIRD, I.M.S., Captain Boulton, I.M.S., and Assistant Surgeon Sheman, L.S.M.D., have passed the Higher Standard examination in Pushtu

CAPTAIN S A C DALLAS, L.M.S., has been granted a fourth extension of furlough on medical certificate. His leave dates from 6th August 1900

CAPTAIN B D'FARE, I.M.S., got three months' privilege leave from 5th May, and Captain D R Green, L.M.S., acts as Civil Surgeon, Hazaribagh. Captain Watling acting as Civil Surgeon of Midnapur in addition to his other duties.

CAPTAIN B DEARE, I.M.S., will act as Sanitary Commissioner, Bengal, *vice* Major Dyson on furlough

It will be noticed that the Entrance Examination for the R.A.M.C. is fixed for July, and that of I.M.S. for August, hence we may conclude that candidates will no longer be examined together, and that the new scheme of examination does not apply to the I.M.S. What about Netley? In the eyes of the War Office the Military duties of the R.A.M.C. are so important that four months are to be given to them at Alder shot, whereas only two months at Netley are considered enough for such trifles as bacteriology and hygiene! This is surely beginning at the wrong end. The professional redemption of the R.A.M.C. depends entirely upon their professional knowledge, and not upon their knowledge of stretcher drill, &c

On the departure on extraordinary leave on urgent private affairs of Major A. Leahy, L.M.S., F.R.C.S., Major E F Maynard, F.R.C.S., I.M.S., comes from Patna to act as Professor of Ophthalmology in the Medical College, Calcutta, and Captain B Oldham, L.M.S., goes to Patna as officiating Civil Surgeon

CAPTAIN H J WALTON, L.M.S., F.R.C.S., has joined the Presidency General Hospital, Calcutta.

CAPTAIN L ROGERS, M.D., M.R.C.P., I.M.S., is posted (on paper) to the General Hospital, but remains acting Professor of Pathology in the Medical College, Calcutta

CAPTAIN S ANDERSON, M.B., B.Sc., I.M.S., on coming to Civil employ Bengal, is posted as Deputy Sanitary Commissioner, Eastern Circle

CAPTAIN H INNES, M.B., I.M.S., on joining civil employ, Bengal, is appointed to act as Civil Surgeon of Hooghly on Lieutenant-Colonel D G Crawford going on furlough

Paragraph 926 of I.A.R., Vol. vi, to be reconstructed as follows—

"926 Medical officers will invariably use their own cases of pocket instruments in hospital practice. They are permitted to obtain the said cases from the medical stores department on payment. They are also permitted to have the articles contained therein replaced by the medical stores department at actual cost to Government including incidental charges"

THE silver Kaissi I Hind medal has been conferred on Captain R. H. Maddox, I.M.S., for good plague work in Chapra District.

LIEUTENANT T G N STOKES, I.M.S., is posted as Civil Surgeon of Sambalpur, C.P.

THE following appointments appear in Bengal Command orders—Lieutenant W D Ritchie, L.M.S., to officiating medical charge of 5th B.C., Captain T A O Langston, I.M.S., to 14th Bengal Lancers, Lieutenant N S Wells, I.M.S., to 1st Brahmins, Lieutenant W M Anderson, I.M.S., to 7th Rajputs, Lieutenant A G McKendrick, I.M.S., to 9th Goorkhas, Lieutenant J Masson, I.M.S., to 12th Bengal Infantry, Lieutenant J W Little, I.M.S., to 13th Rajputs, Lieutenant A W Greig, I.M.S., to 16th Rajputs, Captain C F Weinman, I.M.S., to 48th Pioneers, Lieutenant G Fowler, L.M.S., to wing of Regiment at Buxa, Duars

THE following I.M.S. officers have passed the Lower Standard examination in Urdu, Captain Weinman, Lieutenant N S Wells, Lieutenant W V Coppinger

LIEUTENANT-COLONEL G DUNCAN, I.M.S., who has been acting as Civil Surgeon, Shillong, for the past couple of years, rejoins the Military Department, and goes on furlough. Major Hehir, I.M.S., the Medical Officer, 43rd Goorkhas, acts as Civil Surgeon

ON the retirement of Lieutenant-Colonel E Mair, I.M.S., on 2nd July, Major W J Buchanan, I.M.S., succeeds as Inspector General of Jails, Bengal

THE services of Captain E V Hugo, M.D., I.M.S., are placed permanently at the disposal of the Government of the Punjab

MAJOR R C MACWATT, M.B., L.M.S., is confirmed as an Agency Surgeon of 2nd class under Foreign Department.

LIEUTENANT COLONEL H. HAMILTON, M.D., I.M.S., is granted temporary rank of Colonel while acting as P.M.O., Presidency District.

THE *Gazette of India* for May 31st notifies that the promotion of Colonel B Franklin to the rank of Surgeon General and that of Lieutenant-Colonel G O Hall, L.M.S., to that of Colonel has effect from 2nd December 1901, and not from 1st January 1902, as previously notified

WE note that the new First Field Dressing, as described in corrections to F.S. Code, Medical, Clause 34, is made of salalembroth absorbent cotton wool enclosed in salalembroth gauze (like gauze tissue), and packed in waterproof jaconet, with an outer cover of "millerained" khaki, with printed directions for use

LIEUTENANT COLONEL JOHN ANDERSON, I.M.S., goes to Lucknow as Civil Surgeon. Major G H Baker, I.M.S., to Agra and Major J Morwood, L.M.S., to Gorakhpur

CAPTAIN G HUTCHESON, I.M.S., is posted as Civil Surgeon of Bijnor, U.P.

CAPTAIN H B MERRIN, M.D., I.M.S., has joined Civil employ, Bengal, and is posted to the Presidency General Hospital, Calcutta.

CAPTAIN J W F RAIT, M.B., I.M.S., has come to Civil employ, Bengal, and is appointed to the Eden Hospital, Calcutta.

CAPTAIN J MULVANY, I.M.S., has joined the Bengal Jail Department, and is posted as Superintendent, Presidency Jail, Calcutta, *vice* Captain R H Maddox, who reverts to employ as a Civil Surgeon.

WE understand that there is no foundation for the rumour mentioned in the newspapers that Major J W Leslie, I.M.S., would succeed Major Dyson as Sanitary Commissioner, Bengal. Major Leslie at present is indispensable in the Director General's office.

THERAPEUTIC PREPARATIONS

REMEDIKS for Tuberculosis still continue to be brought forward. Among the latest is **Urea**, the results of the administration of which are said to be very encouraging. With their usual promptitude Messrs. Burroughs, Wellcome & Co. have brought out **Tabloids of Urea**, which form a reliable and convenient means of administering this agent, the dose of which is from five to twenty grains (1 to 4 tabloids).

Der Kinder Arzt for May, 1901, contains an article by Dr P. Lécoultre on **Ethol** (*Das Ethol*).

Ethol is a drug which is considered to possess the property of preventing the formation of pus, and the author of this paper speaks in very high terms of its powers in this respect.

He quotes the experience of Dr V H Moore, who has found the internal and external use of ethol most satisfactory in cases of erysipelas. The remedy must be painted on the affected skin daily, and it should be administered internally at the same time in combination with stimulants and tonics. In pyæmia, in furunculosis, and in bed sores the use of the drug is described as attended with the best results.

The author thinks that pustulation is diminished or entirely prevented by the use of ethol, internally or externally — (*Treatment*).

Treatment of Pertussis — Just at this time of year pertussis seems to be very prevalent in some localities. This time in the year is certainly favourable to the prognosis of the disease. The little patients can be kept in the open air, and not housed in close rooms, which lessens the number of paroxysmal attacks of coughing as well as the severity of the attacks. The medicinal treatment is divided into the antiseptic, the anti-catharrhal and the sedative treatment.

Yeo is convinced that carbolic acid inhalations are of great value in the antiseptic treatment of this disease. He places the child in the small room containing an open fire place, a large iron spoon should be made hot from time to time and carbolic acid vaporized by putting a teaspoonful or two into the heated spoon. The atmosphere should be so strongly impregnated with this vapour, according to Yeo, as to make the atmosphere unpleasant to others. These fumes should be kept up night and day. As a spray for direct inhalation he recommends the following —

R	Acidi carboli	m i	4	} 66
	Glycerini	m i	4	
	Sodii bicarb	gr x	32	
	Aq destil	ʒ i	32	

M Sig Use as a spray in front of the mouth of the infant constantly, so that he is compelled to inhale.

The urine should be under constant observation during above treatment, and if any discoloration occurs, the treatment should be suspended for twenty four hours.

For the Paroxysms — The following combination is recommended to lessen the severity of the paroxysm and to render the expectoration less tenacious —

R	Sodii benzoatis	gr lxxii	5	} 20
	Sodii bicarb	gr xlviii	3	
	Ammonii chloridi	gr xxv	1	
	Aque chloroformi	oz i	32	
	Aque anisi, q s ad	oz iii	96	

M ft. mistura. Sig One to four teaspoonfuls according to the age of the child, in a little hot milk, every four hours. Bamberger recommends the following the moment the attack comes on.

R	Sodii bicarb	oz i	8
	Sacchari, ʒi		

M Sig Dissolve a small amount of the powder in hot water and give to the patient as the paroxysm of coughing comes on.

Dujardin Beaumetz recommends the triple bromide for relief of the paroxysm as follows:

R	Ammon brom			} 128
	Sodii brom			
	Potassii brom ʒi	oz ss	2	
	Syr chloralis	oz i	32	
	Aque, q s ad	oz iv		

M Sig One teaspoonful or more according to age, in milk night and morning.

Roth recommends the following:

R	Acidi carboli	gr xv	1	} 66
	Spts vini rectif	m xv	1	
	Tinct iodi	m x		
	Tinct belladonnæ	m xxx	2	
	Syr papaveris	oz iiss	10	
	Aq menth pip q s ad	oz ii	64	

M Sig One teaspoonful every two hours for a child between one and two years of age, half the quantity diluted with water for infants under one year of age — (*Journal American Medical Association*).

Treatment of the Cough in Tuberculosis — Dr L Weber, in *New York Medical Journal*, recommends the following in the treatment of cough and general irritability —

R	Sodii bicarb	oz i	4	} 96
	Morph sulphates	gr i		
	Aq Laurocerosi	oz i	4	
	Aq chloroformi	oz vi	192	

M Sig One to two teaspoonfuls in two tablespoonfuls of water every three hours.

To combat the disease, instead of prescribing creosote in capsules mixed with oil he recommends the following —

R	Creosoti			} 32
	Alcoholis ʒi	oz i		

M Sig Ten drops in half glass of milk after meals (*Journal American Medical Association*).

Notice

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs. Thacker, Spink & Co Calcutta.

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Selected Essays (New Sydenham Society)
Lunbeck's Pathology of the Blood (New Sydenham Society)
Gibson and Russell's Physical Diagnosis (Young J Pentland)
The Hindu System of Self Culture Br K L Sarsar
Veterinary Pharmacopæia of Bazar Drugs By J D Holmes (Higginbotham & Co.)
Records of the Egyptian School of Medicine (Cairo Printing Co.)

LETTERS, COMMUNICATIONS, RECEIVED FROM —

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Original Articles.

EPIDEMIC MALTA FEVER IN ASSAM— A SHORT PRELIMINARY NOTICE OF CERTAIN RECENT DISCOVERIES RELATING TO THE TRUE NATURE OF KALA-AZAR

BY CHAS A BENTLEY, M B (EDIN),

Borjula, Tezpur, Assam

IN spite of the fact that *kala-azar* has been frequently investigated, it cannot be said that the nature of the condition is as yet at all clearly defined. It is true that both Captain Leonard Rogers, I.M.S., and Major Ronald Ross, I.M.S., came to the conclusion that the disease was malarial in character, but their respective reports differed so markedly in important details, that the one can hardly be said to offer much support to the other, except upon very general grounds.

Rogers states that the evidence of the malarial nature of the condition is so marked, from first to last, that it is scarcely necessary to discuss the possibility of any other infection.

Ross, on the other hand, fails to find many of the definite and generally accepted signs of paludism, in a large proportion of the cases he examined, and he appears to fully realize the objections to the malarial theory of the disease. Thus at page 22 of his "Report on the Nature of *Kala-azar*" he sums up the points for and against a malarial origin as follows—

"For the malarial theory—

(a) The symptoms of *kala-azar* are almost, if not quite, identical with those of malarial fever.

(b) The disease occurs in malarious regions.

(c) Most of the cases contain yellow pigment.

Against the malarial theory—

(a) The high death rate of *kala-azar*.

(b) The intractability to quinine.

(c) The existence of a low constant fever, not amenable to quinine and not like malarial fever, in the second stage of the disease.

(d) The apparent absence of the malarial parasites and the melanin of paludism from many established cases of the disease.

(e) The communicability of *kala-azar* from the sick to the healthy and its epidemicity."

On page 69, however, he states that the probability of *kala-azar* being a specific disease, distinct from malaria, is exceedingly unacceptable. "No observations of a disease exactly like malarial fever, but in which either the parasites or melanin have not been found in the early stages on exhaustive examination, are on record. It is highly improbable that two diseases should present such close pathological similarities, and yet be essentially different."

Finally the paragraph closes with 'the definite statement—

"I think, then, with Rogers, that *kala-azar* is malarial fever."

An experience of some four hundred cases of *kala-azar*, in a recent epidemic in this neighbourhood, together with the results of certain investigations into the nature of the condition, have led me to challenge the idea that *kala-azar* is a form of malarial fever.

A visit which I paid to Nowgong, where I saw a number of cases of *kala-azar*, and recognized them as being of a similar character to the disease which had broken out in a portion of the district under my charge, and the evidence of several European and native medical practitioners familiar with the disease, sufficed to demonstrate the identity of the outbreak, with the epidemic fever, known as *kala-azar*. A careful study of a large number of cases of the disease, in their clinical aspect, convinced me that the disease was not ordinary paludism. Further investigation into the pathology and hæmatology of the condition now show that the epidemic is in all probability a very severe form of so-called "Malta" fever, complicated perhaps in a certain proportion of cases, with an intercurrent attack of malaria.

A reference to the earlier pages of Rogers' Report upon *kala-azar* shows that for many years medical men in Assam have not been entirely convinced of the malarial nature of the condition.

In fact those who are most familiar with the epidemic, Mr. McNaught in particular, have always urged the probability of a specific infection. It appears to me impossible for any one who has made a careful study of *kala-azar* and compared it with ordinary malarial fever, with the aid of a microscope, and after a careful perusal of the latest literature upon malaria, to accept any other conclusion, than that *kala-azar* is a distinct and specific disease.

Clinically *kala-azar* and malaria cannot nowadays be said to resemble one another any more than do typhoid fever and malaria. The only similarity is to be found in the presence of fever, with general enlargement of the spleen and occasionally the liver, and the production of a subsequent anæmia. Other conditions which used at one time to be confused with malaria, frequently show very similar characteristics. Until comparatively recent years, attacks of relapsing fever, cerebro-spinal fever and enteric fever were almost always diagnosed as malarial fever in this country. Reference to Craig's recent monograph upon the æstivo-autumnal fevers will show to what an extent typhoid fever was confused with malarial fever during the Spanish-American War. Malta fever, so-called, which has only very recently been shown to be prevalent in many other parts of the world, besides the countries

bordering upon the Mediterranean, has often been mistaken for malarial fever. Some of the names which have at times been given to it are of themselves an indication of this error "Typho-malarial fever," "Fæco-malarial fever," &c, are terms indicative of the confusion that has frequently existed regarding the nature of this disease.

It appears strange that in the investigations of *kala-azar*, the possibility of the disease being analogous to Mediterranean fever should have been overlooked.

In this article I shall attempt to indicate the similarities that exist between the two conditions.

I shall first, however, enumerate the points which serve to distinguish *kala-azar* from malaria, acute, or chronic.

(a) *Kala-azar* during its early stage never exhibits true pyrexial periodicity.

(b) During the second stage of the condition, quotidian periodicity is common, but the character of the fever is quite atypical of malarial fever, showing a very constant and limited diurnal variation.

(c) At all stages the fever is resistant to and almost unaffected by quinine, even in enormous doses, and for given very long periods.

(d) The examination of the blood fails to show the presence of malarial parasites in the majority of instances, and the frequent absence of pigment (melanin) and other signs of paludal infection, indicate that condition is most probably only an accidental complication.

(e) The morbid anatomy is typical only of chronic pyrexia and its accompanying chronic congestion of the internal organs.

(f) Recent investigation shows that the presence of a micrococcus may sometimes be detected in the spleen tissues.

(g) Reference to an accompanying table will show that *kala-azar* in seventy-five per cent of cases exhibits the specific serum reaction to cultures of the micrococcus *melitensis*.

A short glance at the clinical picture of *kala-azar* shows that it commences as an acute attack of irregular fever, absolutely resistant to quinine. This primary attack is followed by a period of absolute or relative apyrexia, which is broken by a recrudescence of irregular fever. This history of recurring attacks of fever with intervals of apyrexia is repeated for perhaps several months, by which time the spleen and frequently the liver of the patient has become considerably enlarged. Anæmia and marked emaciation are frequently present also, while the skin takes on a peculiar greyish-earthy appearance.

Following upon the splenic and hepatic enlargement, a chronic low fever occurs, while joint pains, simulating rheumatism, and heavy sweats frequently manifest themselves. This stage may last for many months, apparently unaffected by treatment, and recovery may

occur, when the disease has worn itself out. More frequently death ensues, not often from the fever, but from some intercurrent affection such as dysentery, pneumonia or phthisis. Any one familiar with the characteristics of Malta fever cannot but be struck by the resemblance which that condition bears to the clinical pictures of *kala-azar*. I would suggest that those interested in the subject should compare the description of *kala-azar* as found in Rogers' and Ross's reports, with the article upon Malta fever, by Bruce, in Davidson's diseases of warm climates, or with Hughes' monograph upon "Undulant Fever." Until a few months ago, before I had carefully studied the matter, I took it for granted that *kala-azar* was of malarial origin, and as early cases were occurring frequently in my immediate neighbourhood, I treated them for malaria. I soon found how resistant the fever was to ordinary doses of ten and fifteen grains of quinine, and so I gradually increased the dose, until in some cases I have given grains sixty (1 drachm) at one time. Finding that doses of this amount did not stop an attack or prevent a recurrence of the fever, I commenced giving quinine in doses of grains 30, by intra-muscular injection. This failing, I tried methylene blue, tannic acid, and carbolic acid in large and increasing doses, but without avail. Aconite, opium, tincture of Walburg, as well as all the synthetic anti-pyretics were all tried in turn, but proved of little use. During this period I examined many blood films from cases of *kala-azar*, both in the fresh and stained condition but although I found certain changes present in the blood of very many of these cases, I failed to find true malarial parasites, or pigment in all but a few isolated instances. The changes most frequently observed were,—the presence of normoblasts, polychromatophilia—and increased number together with a peculiar reticulation of the blood plates, when examined after Nakanish's method of staining fresh films.

At the same time I made a careful study of all the available recent literature upon malaria, and thus I soon became convinced of the error of continuing to regard *kala-azar* as a manifestation of paludism.

About three months back, I happened to be examining some fresh films prepared from the spleen of a fatal case of *kala-azar*. Among the splenic cells, free in the plasma, I noticed a number of small bodies resembling micrococci in active molecular motion. In a dried film, I was subsequently able to stain some of these bodies, after a good deal of difficulty, but it was exceedingly difficult to distinguish them except in very thin films. Following up this discovery, I sent a series of blood samples to Major R. Semple, R.A.M.C., Director of the Pasteur Institute, Kasauli, who very kindly examined them for me by means of the serum agglutination tests for typhoid and Malta fever. The result of the examination

of some twenty-five samples is given in the annexed table. From this it will be seen that fifty per cent of the bloods examined gave a complete reaction to Malta fever, in all of three dilutions, and another twenty-five per cent showed a more or less partial reaction. Six bloods gave no reaction at all.

It is evident then that in Assam we have a severe type of Malta fever, which exists in an epidemic form, and which is probably very much more virulent than the analogous fever of the Mediterranean coast. Whether this fever was originally endemic in India, and has been introduced into Assam among its immigrant population, it is difficult to say. It is a significant fact, however, that *kala-azar*, which (as Rogers shows) was a continuation of the Rungpur epidemic of the sixties and seventies, and was also analogous to the famous Burdwan and Mauritius epidemics of a slightly earlier date, should have occurred so soon after the Indian Mutiny.

It is well-known that many of the thousands of British troops engaged in the Crimea were invalided by attacks of fever, which were exceedingly common in that part of Europe. Many of these men were subsequently drafted to India, after the outbreak of the mutiny, and it is not beyond the bounds of possibility that the disease was first introduced into India by them.

Gradually gaining a hold among a susceptible population, it swept in a wave, through many parts of the country, increasing in virulence and intensity. Where populations were dense, its advance has been rapid as in Burdwan and Rungpur. In Assam, with its scanty population, it has taken many years to pass from one portion of the province to another.

This is of course purely hypothesis, but it appears to me to afford a reasonable explanation of many of the peculiarities of *kala-azar*,—its communicability and epidemicity.

The fact that when once the disease was introduced into Assam, it was the *indigenous population* who suffered the *first and the most severely*, and that after them, it was old and long acclimatized coolies who had settled down away from the gardens, who were the next to suffer. These people introduced it among the old coolies on the tea gardens, and so the disease gradually spread. This history is altogether different to what we know of the incidence of malaria.

In malaria-infected countries, such as Assam, was known to be, before the occurrence of *kala-azar*, the indigenous population and acclimatized inhabitants possess a relative immunity to the attacks of paludism, and it is the new comer who suffers severely. Can we imagine that this experience would be reversed for one small part of one malarious country in the world? There are many other considerations involved in the discovery to which I have called attention in this paper, but these must be left for some future

occasion. All I will now add is the prophecy that future investigation will show, that a large percentage of the fevers of India will prove to be of similar origin to the endemic fever of the Mediterranean sea-board. I may add that I am arranging to seek for bacteriological and experimental confirmation of the micro-coccal origin of *kala-azar*, and I shall hope shortly to publish some further notes upon the matter, together with the results of an exhaustive study of the hæmatology of the condition.

I am greatly indebted to Major D Semple, R.A.M.C., who has, by his kindness in examining samples of blood for me, given ample confirmation of the correctness of this new theory regarding the nature of *kala-azar*.

TABLE OF AGGLUTINATION REACTIONS FOR MALTA FEVER.

No	1 in 10	1 in 20	1 in 40	Remarks
1	Complete	Complete	Complete	Diagnosed as K. A. recently
2	Nil	Nil	Nil	Very ill
3	Nil	Nil	Nil	Dead
4	Complete	Complete	Complete	
5	Partial	Partial	Nil	Dead
6	Complete	Complete	Complete	Not diagnosed K. A. Dead
7	Complete	Complete	Complete	
8	Complete	Complete	Complete	
9	Feeble	Feeble	Nil	Very ill
10	Complete	Complete.	Partial	Dead
11	Complete	Complete	Nil	Dead
12	Complete	Complete	Complete.	
1a	Complete	Complete	Complete	
2a	Complete	Complete	Complete	
3a	Nil	Nil	Nil	Dead
4a	Sample damaged			
5a	Sample damaged			
6a	Nil	Nil	Nil	Dead
7a	Complete	Complete	Partial	Very ill
8a	Nil	Nil	Nil	Very ill
9a	Complete	Complete	Complete	
10a	Complete	Complete	Partial	Also gave reaction to Typhoid in 1/10
11a	Complete	Complete	Complete	
12a	Complete	Complete	Complete	
13a	Complete.	Complete	Complete	
14a	Complete	Complete	Partial	
15a	Nil	Nil.	Nil	Dead.

REPORT ON CEREBRO SPINAL MENINGITIS

IN THE BHAGALPUR CENTRAL JAIL, 1900 1901

By

CAPTAIN E. A. R. NEWMAN, M.D., I.M.S.,

Civil Surgeon, Bhagalpur

Fourth Outbreak (from October 1900 to July 1901)

No	Sex	Caste	Age	Period in jail	Date of attack	Result.	Date of result.	Slept in ward	Form of labour	Meteorological condition
1	2	3	4	5	6	7	8	9	10	11
48	Male	Hindu	Yrs 32	Y M D 0 5 17	7th Oct 1900	Died	25th Oct 1900	11	Mehtar	Strong on left 28th, 29th, windy 30th
49	Do	Muhammadian	24	0 3 13	13th " "	Do	14th " "	7	Public Works Department road work	High wind 6th 10th, 11th, calm 12th
50	Do	Hindu	24	0 7 14	23rd " "	Do	26th " "	13	Aloe pounding	Calm weather
51	Do	Do	40	1 2 5	27th " "	Recovered	7th Dec. 1900	7	Garden outside	Ditto
52	Do	Do	58	1 2 5	1st Dec. " "	Died	29th Jan. 1901	7	Sweeping in No 4	Nov 29th windy, 30th calm
53	Do	Do	30	0 6 18	18th Jan 1901	Do	29th Jan. 1901	14	Garden outside	Windy two days previously
54	Do	Muhammadian	26		14th Feb " "	Recovered		12	Public Works Department road work	Calm after wind on 11th, 12th
55	Do	Do	45	0 5 2	18th " "	Died	24th Feb 1901	11	Spanning in No 1	Feb 15th, 16th
56	Do	Hindu	45	0 5 1	5th Mar " "	Do	5th Mar " "	5	Do in No 5	2nd Mar windy, 3rd fine, 4th windy
57	Do	Do	30	0 6 20	5th " "	Do	6th " "	6	Sweeping in No 6	Ditto
58	Do	Do	36	0 1 14	7th May " "	Do	10th May " "	1	Husking paddy	May 4th-6th very windy
59	Do	Do	40	0 1 14	26th " "	Do	30th " "	10	Mehtar	May 24th, 25th windy
60	Do	Muhammadian	55	0 1 7	27th " "	Do	30th " "	6	Godownmanfty.	May 23th, windy
61	Do	Hindu	28	0 0 22	6th June " "	Do	11th June " "	10	Rice cleaning	June 3rd, 4th sultry, June 5th, high winds.
62	Do	Do	29	0 2 5	11th " "	Do	11th " "	10	Ditto	June 6th-10th, high winds
63	Do	Do	50	0 0 22	15th " "	Do	19th " "	10	Aloe pounding	12th, 13th dust and storm, 14th, wind and rain
64	Do	Do	45		25th " "	Recovered		12	Oil mill and water	22nd, 23rd windy, 24th wind and rain
65	Do	Do	26	0 1 22	22th " "	Died	10th July 1901	15	Power loom weaver	25th 26th windy, 27th in rain, 27th fine
66	Do	Do	30	0 1 6	29th " "	Recovered		15	Rice cleaning	23th windy, no rain
67	Do	Do	25	0 1 8	20th July " "	Died	29th July 1901	16	Wheat grinding	Calm and sultry, break in rains

Fifth Outbreak (from September, 1901, to March 1902)

68	Male	Hindu	Yrs 35	Y M D 0 1 6	3rd Sep 1901	Died	4th Sep 1901	11	Blacksmith	Fine and hot, break in rain
69	Do	Do	30	0 4 22	5th " "	Do	30th " "	8	Garden outside	3rd and 4th, rain and wind
70	Do	Do	28	0 4 11	25th " "	Do	30th " "	10	Wheat grinding	22nd, 23rd rain & wind, 24th fine.
71	Do	Muhammadian	56	0 0 18	6th Oct. " "	Do	7th Oct. " "	7	Carpenter	Calm, sultry
72	Do	Hindu	42		20th " "	Recovered		16	Public Works Department road work.	Ditto
73	Do	Muhammadian	35	0 3 18	20th Nov " "	Died	25th Nov 1901	5	Rice-cleaning	Calm
74	Do	Hindu	26	0 0 27	24th " "	Do	" " "	9	Public Works Department, outside	Calm, sultry

Fifth Outbreak (from September 1901 to March 1902) —(Contd.)

No	Sex	Caste	Age	Period in jail	Date of attack	Result.	Date of Result.	Slept in ward	Form of labour	Meteorological condition
1	2	3	4	5	6	7	8	9	10	11
75	Male	Hindu	50	0 5 27	27th Nov 1901	Died	28th Nov 1901	10	Godown, general	24th calm, 25th L wind, 26th high wind, dust and storm Ditto
76	Do	Do	30		28th " "	Recovered		16	Public Works Department, inside	
77	Do	Do	35	0 2 11	3rd Dec. "	Died	5th Dec 1901	10	Mehter (In hospital 30 days before attack)	Dec 1st, 2nd calm, L wind on 3rd
78	Do	Do.	26		7th " "	Recovered		15	Rice cleaning	Calm weather
79	Do	Do	30	0 1 8	8th " "	Died	9th Dec 1901	16	Ditto	Ditto
80	Do	Do	47	0 1 18	13th " "	Do	31st " "	11	Ditto	Calm
81	Do	Do	47		18th " "	Recovered		11	Ditto	Do
82	Do	Do	26	0 8 19	19th " "	Died	23rd Dec 1901	2	Cow keeping	16th, 17th, 18th L. winds
83	Do	Sonthal	26	0 1 15	1st Jan 1902	Recovered	23rd Jan 1902	8	Rice cleaning	
84	Do	Hindu	35	1 4 0	6th " "	Do	3rd May "	1	H Loom	
85	Do	Do	30	0 1 23	8th " "	Died	13th Jan "	9	Sweeping	
86	Do	Do	26	0 3 25	1st Feb "	Recovered	2nd Mar "	4	Oil mill and water	
87	Do	Do	21	0 0 21	28th " "	Died	2nd " "	6	Road work	
88	Do	Do	38	0 1 6	27th Mar "	Recovered		4	Under trial	
89	Do	Do	60	0 1 5	31st " "	Died	2nd Apr 1902	10	Sweeping	

THE last report by Major W J Buchanan and Captain C R Stevens of the Indian Medical Service included all cases up to July 1900, describing them under the head of different epidemics. Since then the disease has been practically endemic in the jail, almost every month since October 1900 showing a case. I have included in this report all cases occurring from October 1900 to March 1902. The following table shows the monthly incidence —

fifth outbreak. Twenty cases in the latter outbreak were under my personal observation.

Clinical features.—Of the 42 cases under report, 30 died and 12 only recovered—a percentage mortality of a little over 71 deaths in the number attacked, or some 3 per cent higher than the previous death-rate calculated by Major Buchanan, I.M.S.

Duration of illness—One case died on the 57th day. Excluding this (to which I shall

	1900			1901												1902.			
	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April
Number of attacks	4		1	1	2	2		3	6	1		3	2	4	6	3	2	2	
	Fourth outbreak										Fifth outbreak								

June and December 1901 with 6 cases in each month show the heaviest monthly incidence. It is interesting to note with reference to the last epidemic that April, the month in which it was worst in 1900, shows no cases in 1901 or 1902. I think the epidemic of 1900-1901 may naturally be considered to end of July 1901, and the epidemic of 1901-1902 extends from September 1901 to the end of March 1902. The total number of cases during the whole period is 42, or 20 in the fourth and 22 in the

again have occasion to allude), the duration of the illness in the remaining 30 cases was as follows —

2 cases died within 24 hours of onset of illness

6	"	"	"	48 "	"	"
3	"	"	"	3 days	"	"
4	"	"	"	4 "	"	"
3	"	"	"	5 "	"	"
6	"	"	"	1 week	"	"
5	"	"	"	19 days	"	"

an average duration of a little over five days per case. From this it may be seen that nearly four-fifths of the total deaths occurred within a week of the onset of symptoms. I may mention here that in Captain Stevens' experience recovery took place if the patient lived three weeks. This analysis bears out this opinion with the one exceptional case in which the patient died on the 57th day.

Symptoms, complications, and diagnosis—The most constant symptoms are pyrexia, frontal headache, pain at the nape of the neck, and stiffness of the posterior cervical muscles, conjunctival congestion, furred tongue, increased reflexes, particularly knee-jerkings, symptoms varying from day to day, diarrhoea usually, occasionally only slight looseness of the bowels, restlessness, sleeplessness, and delirium usually of a low muttering type, occasionally active. Other symptoms that may be present are paresis of the facial muscles or limbs, herpes labialis and squint. General pains, particularly in the joints, lumbago, and pain along the spine. Retraction of the head may be marked, but is by no means a constant symptom. Inability to bend the head forwards and passive resistance, accompanied with pain in the back of the neck when the head is actively bent forward by the observer, is an almost constant symptom and of greater diagnostic value on this account. In some cases total unconsciousness is the rule, coming on early, if it is not the very first symptom to attract attention.

There are three main types of the disease—

- (1) The fulminant variety
- (2) The acute
- (3) The subacute

The nomenclature explains itself.

In the fulminant type the disease occurs with remarkable suddenness. The patient is either discovered unconscious with stertorous breathing shortly after he has been pursuing his ordinary avocations, or complains of illness and rapidly falls into a comatose condition.

In the acute variety there is some malaise with a rapid onset of the severe symptoms, while in the subacute variety the symptoms either develop more slowly or are never so severe in character. The patient may sometimes retain consciousness throughout the illness or may be easily roused from low delirium.

Complications—Lobar pneumonia is the most important one, and was recognised clinically in five cases. In one case that died double lobar pneumonia was found at post-mortem. It may be more prominent than the cerebral or nervous symptoms, and the latter are then liable to be overlooked.

Pain in the joints. The results of pyæmic arthritis were noticeable in three cases, particularly in the case that died after 57 days'

illness. In this case death was undoubtedly due to pyæmia, though typical *post-mortem* appearances were found in the cerebral meninges. Other complications have been noted above, particularly diarrhoea, which is so constant that it may be called a symptom. Herpes labialis has also been noted.

Hyperpyrexia is a not infrequent complication of severe cases, especially in the fulminant type of the disease. It also occurs towards the end, and is frequently the accompaniment, if not the actual cause, of a fatal termination.

The temperature curve varies greatly and is not characteristic. Sharp fluctuations are seen in some cases, in others it may maintain a fairly constant line about 100° or 101° F. In all cases pyrexia at the commencement is, I believe, the rule, though in one case it rapidly fell and remained subnormal, while acute symptoms were present.

Diagnosis—When the disease is epidemic and the attention of the observer is on the alert, diagnosis is not as a rule difficult.

The fulminant type of cerebral-spinal meningitis has to be distinguished from heat apoplexy or cerebral hæmorrhage. When the conditions necessary to the production of heat apoplexy are present, the diagnosis may be very difficult. Hyperpyrexia and coma are present in both cases. Stiffness of the cervical muscles, and Kernig's symptom, if present, are the symptoms on which reliance must be placed. The history and age of the patient may help in the differential diagnosis from cerebral hæmorrhage, but in the absence of definite localizing symptoms on the one hand, and cervical stiffness and Kernig's symptom on the other, the diagnosis may be almost impossible. Pyrexia points to cerebro-spinal fever, though this is not by any means absolutely diagnostic. A *post-mortem* on one case in my experience illustrates this difficulty. In this case bilateral cerebral hæmorrhage was actually present, with early lepto-meningitis and great injection of the cerebral vessels which had given way under the strain.

In the acute variety pneumonia may complicate and overshadow the cerebral symptoms.

When multiple arthritis is present, a diagnosis of acute rheumatism might be erroneously made or pyæmia, though this is not so far from the mark.

More chronic cases in which diarrhoea is a prominent symptom bear some resemblance to enteric. Convalescence is slow.

Post-mortem appearances—Captain C. R. Stevens, I.M.S., has given a very complete account of the *post-mortem* appearances found in cerebro-spinal fever. I have not described them here, as my experience is limited to 12 *post-mortems*.

performed from October 1901 to March 1902 in the second outbreak described

Etiology—During the period under report no bacteriological examination of the cerebro-spinal fluid was, as far as I am aware, made. The diplococcus intracellularis is generally accepted as the specific micro-organism of this disease, and a micro-organism answering this description was found in certain cases in previous epidemics.

The varying conditions of life in the central jail at Bhagalpur depend on two factors—*firstly*, the labour on which the prisoners are employed, and *secondly*, the barracks in which they sleep. Apart from this, there is a general similarity of vital conditions. The hours of work and rest are the same. The food of all prisoners is practically the same. A few up-country Muhammadans get meat and a few weakly or convalescent prisoners have a specially-cooked and more easily-digested diet. The water-supply for all is the same.

Before considering the various forms of labour, it will simplify an understanding of the subject to point out that some 50 to 70 females live apart at the end of the jail. Adjacent to the female barracks are the juvenile wards, where a like number of prisoners under 20 are confined. Cerebro-spinal meningitis has never occurred amongst the former and not amongst the latter during the period under report. The disease has therefore been confined to the adult male population of the jail, who occupy the main barracks in the centre of the jail and constitute 85 to 90 per cent of the total population. The

numbers vary from 1,650 to at times nearly 1,800. The main industry is blanket-making with steam-powered looms inside a large brick building employing about 700 prisoners. A few others make carpets at hand-loom, and are employed as carpenters, smiths, and overseers. This accounts for some two-thirds of the adult male population. The remaining third is employed on the general duties of the internal economy of the jail, and their occupations include rice-husking, wheat-grinding, sweeping, road-making, aloe-pounding, cow-keeping, and outside garden work, while a few work in the grain godowns, at the oil presses, or at drawing water. The former occupations are chiefly carried on in closed buildings, the latter chiefly in the open air or open sheds.

The main distinction between these forms of labour is that in the former the atmosphere is comparatively free from dust, while the latter are some of them very dusty occupations, particularly rice-husking, road-making, and sweeping, and almost all these latter occupations being carried on in the open air, the occupants are far more exposed to duststorms, which occur with great frequency throughout the cold weather and earlier part of the hot weather, and with somewhat less frequency until the rains break.

Having thus explained the chief difference in the conditions under which the various kinds of labour are carried on, a comparison of the incidence of the disease amongst prisoners employed on different forms of labour is instructive. This is shown in the following tables—

Fourth outbreak (October 1900 to July 1901)

Nature of employment.	Number of cases	Dates of attack
1	2	3
Rice cleaning and husking	4	7th May 1901, 6th June 1901, 11th June 1901, 29th June 1901
Road making and Public Works Department works	2	14th October 1900, 14th February 1901
Garden work, outside	2	27th October 1900, 18th June 1901
Sweeping	4	7th October 1900, 1st December 1900, 5th March 1901, 26th May 1901
Wheat grinding	1	20th July 1901
Aloe pounding	2	23rd October 1900, 15th June 1901
Oil mill and water-drawing	1	25th June 1901
Total	16	(Dusty employments)
Manufactory godown	1	27th May 1901
Power loom weaver	1	28th June 1901
Hand loom	2	18th February 1901, 15th March 1901
Total	4	(Non dusty employments)

Fifth outbreak (September 1901 to March 1902)

Rice cleaning and husking	6	20th November 1901, 7th December 1901, 8th December 1901, 13th December 1901, 18th December 1901, 1st January 1902.
Road making and public works	4	20th October 1901, 24th November 1901, 28th November 1901, 28th February 1902
Garden work, outside	1	5th September 1901
Sweeping	2	8th January 1902, 31st March 1902.
Wheat-grinding	1	25th September 1901
Cow keeping	1	19th December 1901
General godown	1	27th November 1901
Oil mill and water drawing	1	1st February 1902.
Total	17	(Dusty employments)
Blacksmith	1	3rd September 1901
Carpenter	1	6th October 1901
Hand loom weaver	1	6th January 1902
Total	3	(Non dusty employments)
Mehter (30 days in hospital upon attack)	1	3rd December 1901
Under trial prisoner in No 4 ward	1	27th March 1902
Total	2	(No employment.)

For the two outbreaks there were 33 attacks in prisoners employed on dusty forms of labour and 9 only in prisoners employed on non-dusty forms of labour, including in the latter category one under-trial who had no work and one mehter who had been sick in hospital for 30 days with gluteal abscess before he was attacked. He was in the general ward and not in contact with cerebro-spinal fever patients.

I have included one blacksmith and one carpenter amongst the second category too, to be strictly impartial. Their work is, however, carried on a good deal in the open air, and is certainly dustier than the power-loom weavers in the steam factory.

The comparative total of incidence in the two outbreaks is 78.5 per cent in dusty employments and 21.5 on non-dusty employments. This percentage would be raised to 85 if smiths and carpenters who work to some extent in the open air were included in the list of dusty employments. Further, the total number of adult male convicts employed on dusty or outdoor forms of labour is roughly about 50 per cent of those working in the factory and elsewhere under cover on non-dusty employments. A simple calculation shows that in these two outbreaks there was one attack in every 17 men amongst the former to 1 attack in every 120 men amongst the latter, or, in other words, the disease was seven times more common in men employed on dusty work than in men on non-dusty forms of labour.

Sleeping barracks—The conditions of life by day have been considered. It remains to consider the difference in the condition of the various prisoners at night.

The sleeping rooms are 16 in number, of which Nos 1 and 2, 13 and 14, and 15 and 16 are old buildings on the ground, while Nos 3 to 12 are more recent *pucca* buildings, arranged in two stories, 3, 5, 7, 9, and 11 being upper stories.

The following tables show the incidence of attacks on prisoners sleeping in different wards in the two outbreaks. Taking the two outbreaks together, ward 16 shows the highest number of cases, viz, 7. This is an old ward. Next, ward No 11, viz, 5 cases. Numbers 10 and 7 also 4 each. These are new *pucca* wards. The six old wards show collectively 15 cases, the 10 new *pucca* wards collectively 26 cases, or an average of 2.5 cases per ward. There does not therefore seem to be any particular predisposition to the disease from sleeping in the old wards.

The five upper stories (3, 5, 7, 9, 11) show 13 cases—just over 2.6 per ward.

The 12 groundfloor wards, old and new together, show 28 cases, or 2.3 per ward.

Sleeping upstairs in short does not seem to afford any protection.

Ward No 16, which shows the largest number, is the barrack where the short-term prisoners are accommodated, and these prisoners are usually employed on the minor occupations in the internal economy of the jail, as it is not worth while training them to work in the factory. Though the ward may be at fault, the nature of their employment must be taken into consideration too. An examination of the dates of the attacks shows the cases were scattered about the various wards, and only in two instances did cases occur in the same ward at such short intervals that a common source of infection in the ward might be suspected. These instances are ward No 11 in the later outbreak—two cases, on 13th and 18th December, respectively, and ward No 3 in the earlier outbreak—two cases, on 28th and 29th June, and perhaps a third in ward No 16—two cases, on 6th and 15th June, respectively, in the earlier outbreak. A fourth possible instance in ward No 16—two cases on 28th November and 8th December, respectively, in the latter outbreak.

An examination of the employment table shows that the first two cases were both employed on rice cleaning, however, the second two cases—one at the power-loom and the other on rice-cleaning, and the third two cases on rice-cleaning and aloo-pounding, respectively, while in the fourth instance one man was employed in Public Works Department work and the other at rice-cleaning. In the case of only one power-loom worker, who was not particularly exposed to infection on account of his work, a possible double mode of infection does not apply, and he was the first to be attacked. I may here note that no case of infection of attendants on patients suffering from cerebro-spinal fever has ever been noticed in hospital.

From these considerations it seems certain that the conditions obtaining in the sleeping barracks have little or nothing to say to the propagation or spread of the disease. In barrack No 16, which shows most cases, the employment factor applies and robs it to a great extent of any significance. Further, the other old barracks, similar in construction, do not show any particular unhealthiness.

Fourth outbreak (October 1900 to July 1901)

Ward	Number of cases	Date of attacks
1	2	3
1	1	17th May 1901
2		
3		
4		
5	1	5th March 1901
6	2	5th " " , 27th May 1901
7	3	13th October 1900, 27th October 1900, 1st December 1900
8		
9		
10	2	26th May 1901, 11th June 1901.
11	2	7th October 1900, 18th February 1901
12	2	14th February 1901, 25th June 1901
13	1	23rd October 1900
14	1	28th January 1901
15	2	28th June 1901, 29th June 1901
16	3	6th June 1901, 15th June 1901, 20th July 1901
Total ..	20	

Fifth outbreak (September 1901 to March 1902)

1	1	6th June 1902
2	1	19th December 1901
3		
4	2	1st February 1902, 27th March 1902.
5	1	20th November 1901
6	1	28th February 1901
7	1	6th October 1901
8	2	5th September 1901, 1st January 1902
9	2	28th November 1901, 8th January 1902
10	2	25th September 1901, 27th November 1901
11	3	3rd September 1901, 13th December 1901, 18th December 1901
12		
13		
14		
15	1	7th December 1901
16	4	20th October 1901, 28th November 1901, 8th December 1901, 31st March 1902.
Hospital for one month	1	3rd December 1901
Total	22	

The following tables show the period passed in jail in the case of 35 prisoners attacked. The record of seven who recovered is not available —

Number attacked	Period in jail
2	.. { 1 year, 4 months } respectively,
1	{ 1 " 2 " }
2	During the 9th month,
4	" 8th "
1	" 6th "
4	" 5th "
2	" 4th "
13	" 3rd "
5	" 2nd "
	" 1st "

the shortest period being 18 days. This is not quite an accurate statement, as some prisoners passed a certain time as under-trial prisoners in the jail before conviction.

The average period works out at about four months.

From this it appears that the new comer is more liable to the disease, especially as this is a central jail, and there are a large proportion of long-term prisoners.

Here, again, the employment factor complicates the question, as short-time men are usually employed on dusty and outdoor forms of labour. But giving this due weight, I think that a balance of evidence remains in favour of the greater susceptibility of recently-admitted men who are not acclimatized.

Incubation period—It is difficult to make any definite statement on this point. One case was attacked after 18 days in jail, four others in three weeks. This gives a limit, but nothing more. In the case of a mehter who developed the disease on the sixth day after admission to hospital, there is some support to the supposition that the period of incubation may be about seven

days, as exposure to infection while at work was at least more probable than while he was in the general hospital ward. The possibility of this latter condition is exemplified in the case of the second mchetai, who developed the disease after one month in hospital. On the whole, I am inclined to think that the period of incubation is usually a short one—from one to three days. Intimately connected with this subject are meteorological conditions, which I will now consider.

Meteorological conditions—In the table appended it will be noted that, as a general rule, the weather was windy and boisterous a few days before each attack. The meteorological conditions are noted from the observers' records entirely independent of the jail. In the last quarter of the year 1901, rough weather was not always the rule, and a few cases occurred after periods of calm.

The general meteorological conditions in 1901 were dry and windy weather up to the end of March. Occasional rain fell in April, and three or four heavy showers in May accompanied with wind. In this month and in June the weather was hot. In June there were high winds, but very little rain till the 24th, when the rains broke, though comparatively little fell. The rains generally were deficient with frequent breaks. September was a dry month, and the last rain fell on the 23rd. After this there was practically none except one slight shower in November till the end of the year. The beginning of 1902 was also rainless, the first shower falling about the 10th of April. The table of monthly incidence shows dropping cases throughout the first-half of 1901, excepting April, culminating in a maximum of six cases in June when the outbreak practically ended, except for one case in July in the wheat-grinding shed. August, a month when the rains are well established and the soil thoroughly saturated, was free. The disease appeared again in September 1901, continued to the beginning of the hot weather, 1902, reaching its maximum in December 1901. June and December, the hottest and coldest months, show equal numbers. One conclusion, it may safely be drawn that hot sultry weather has *per se* no direct influence in the causation of the disease. Of six cases occurring from 8th December 1901 to 1st January 1902, five were working in the rice-cleaning shed, which points strongly to a common source of infection in the shed.

The only other factors unconsidered are, age, sex, caste, and overcrowding. Ages vary from 21 to 60. In sex all the patients are males, caste shows a preponderance of Hindus. All these facts are explained by the peculiar conditions of jail life. The disease has appeared only amongst the adult male portion of the jail, and Hindu prisoners largely outnumber Muhammadans.

Overcrowding—This, from experience elsewhere, is generally considered an important factor in the prevalence of cerebro-spinal fever. The following table shows the average daily number throughout the year of adult male convict in the jail during the various outbreaks since 1897—

Outbreaks.	Date	Number of cases	Daily average adult male population
1	2	3	4
First	January to April 1897	9	1,504 for 1897
Second	October 1897 to April 1898	3	1,504 " 1898
Third	August 1899 to July 1901	10	1,455 " 1899
		4	1,605 " 1900
Fourth	October 1900 to July 1901	20	1,638 " 1900
		5	1,638 " 1901
Fifth	September 1901 to March 1902	15	1,714 " 1901
		7	1,630 " 1902

or shown annually—

Year	Total cases	Average daily population
1897	12	1,504
1898	10	1,455
1899	4	1,605
1900	25	1,638
1901	30	1,714

There is an increase under both heads during the last two years—hardly enough to draw any definite conclusion. Throughout 1901 the jail was overcrowded, especially during the last six months, the total daily population during October or November reaching the highest figure, *viz.*, 1,933. Early in 1902 the population was largely reduced.

Summary—To summarise these conclusions, sex, age, and caste seem to have no particular influence on the disease. The portion of the jail occupied by adult males was alone affected, and the female, juvenile, and *hajat* wards, which are quite cut off, were free. There is no reason to suppose from experience elsewhere that females or juvenile males are less susceptible. It is merely a question of topography. The conditions obtaining in the various sleeping barracks seem to have had no influence on the incidence or spread of the disease, excepting perhaps ward No. 16, where other factors apply. The food is practically the same for all prisoners, and no predisposition could be traced through it.

The water-supply is the same for all, and the same conclusion applies. Personal contagion has never been traced in the special ward, where the cases are treated—the only place where it could be recognised with certainty if it occurred. Overcrowding seems to have some influence. At all events attacks have been more frequent when the jail was more thickly

populated New prisoners, or those who have been in jail under six months, are most frequently attacked, and though this issue is complicated by the question of labour, it is possible that want of acclimatization may exert some influence in predisposition to the disease.

Dry and boisterous weather appears to be a favouring factor in its spread, presumably by the distribution of dust, and, lastly, the most probable—it may almost be said the only—definite condition which can be traced in the causation and spread of the disease is the kind of labour the prisoners are employed on.

Those employed on dusty forms of work have, in these two outbreaks under report been seven times as frequently attacked as those employed on non-dusty forms of labour in buildings cut off from exposure to the atmosphere and atmospheric dust. Rice-cleaning, the dustiest occupation of all, accounted for 10, or nearly 25 per cent of the total cases, road-making and garden work together for 9, or about 20 per cent more, sweeping for 6, and various other occupations for 8, or a total of nearly 50 per cent of all attacks.

The non-dusty forms of employment show seven cases, or including one prisoner attacked while sick in hospital for about a month previously and one under-trial prisoner on no work, 9 cases, or a total of about 20 per cent of the whole number attacked. After reviewing all these different conditions, it is impossible to come to any other conclusion than that the presence of dust is an important factor in the causation of cerebro spinal meningitis in this jail.

I can claim no originality for these views. They were first formulated by Major W J Buchanan and Captain C R Stevens, I M S, in their reports on other epidemics, but it is a striking coincidence that an entirely independent examination of the cases which have occurred since they issued their reports corroborates their findings so closely, and is a good additional proof of etiological importance of the presence of dust in the outbreaks of cerebro-spinal fever in this jail.

I lay particular stress on this, as Captain Rogers, I M S, in a note on Captain Stevens' report traverses his conclusions. To quote his own words—

"Admitting that we know very little of this organism outside the body, still such facts as we are acquainted with all point strongly to dust being the most unlikely medium by which cerebro-spinal fever could be communicated to men and necessitate great caution in accepting this medium as a probable one."

The evidence from actual and continued observation in this jail, on the contrary, points to dust not as the most unlikely, but as the only probable medium by which cerebro-spinal fever is communicated. The artificial conditions

appertaining in a laboratory on which Captain Rogers relies in support of his contentions must be widely different from those occurring in every-day existence. In an editorial note on Major Buchanan's paper, published in the *Journal of Hygiene*, Volume I, No 2, April 1901, and quoted also in the Sanitary Commissioner to the Government of India's Annual Report for 1898, it appears that Germano in 1897 was more successful in preserving the vitality of the organism, which he mixed with sand, earthware (?) or brickdust (moist and dry), and found they survived 80—90 days under these conditions. Germano's conclusion is of particular interest, viz, that the diplococcus is one of the most resistant non-sporogenic bacteria, and that it may very well cause infection when floating in the air as dust. Kamen (*loc cit*) believes its viability is increased by a saprophytic existence. It has been objected to the dust theory that if dust is so potent a factor, why are the female prisoners, whose chief employ (grain-sifting) is very dusty, free from the disease?

This objection is easily answered, as it is based on a misconception. It is not dust *per se* that causes the disease, but *plus* infection. Given the infection, dust in some way favours its growth or spread. How it acts whether as a predisposing cause by irritation of the mucous membrane of the respiratory passages, and so rendering the individual more vulnerable to the invasion of the bacterium, or because it is a suitable nidus for its saprophytic growth is a question of comparative unimportance. Captain Rogers suggests the former. Cloths are worn over the mouth and nostrils in the rice-cleaning and grain-sifting sheds, but it cannot be said to have reduced the disease during 1901. It is impossible to say how or when the disease was introduced. The first case in all these outbreaks had been in jail at least 36 days before developing the disease. During November or December 1901 I made a *post-mortem* on the body of an old woman in Bhagalpur, who was said to have died of the result of foul play. I found the typical *post-mortem* appearances of cerebro-spinal meningitis. This is interesting as showing that the disease occurs in the district. If it had not been for the entirely fortuitous circumstance that foul play was suspected, the *post-mortem* would never have been made, and this interesting fact would not have been discovered. In 1894 there is a record of a similar case in Bhagalpur town. Ordinarily speaking, such cases are far too ill to seek treatment in charitable dispensaries, and even if a case is admitted now and then, it is quite conceivable that it is wrongly diagnosed and can never be checked by *post-mortem* examination. There is no record of any admission in the Sadai dispensary here. From the nature of the disease it is not only possible, but I think

probable that it may be widely prevalent in a district, and yet never be recognised, deaths, from it going to swell the deaths from fevers, which bulk so largely in the mortality returns.

The following theory will, I think, afford as adequate an explanation of the presence of the disease in this jail as the state of our knowledge at present justifies. The specific micro-organism was at some time introduced, and finding a suitable nidus in the dust or soil of the jail, has continued to grow and thrive, at times increasing in virulence in its saprophytic stage of existence under conditions that are not understood, until it manifests itself in an isolated case or an outbreak, which subsides again, especially when the soil is saturated and the dust laid. The process then again going on as before. As the disease is known in the district, it is possible that re-infection may at any time take place. This theory is in accordance with the bacteriological experience of Germano and Kamen above quoted, and with the experience of the practical conditions of life in the jail.

Measures for prevention—Finally, I suggest the following practical measures for its prevention—

(1) Provision of better sheds for rice and grain-cleaning, etc., with *pucca*, smooth walls, and rounded off angles to ensure the possibility of removal of all dust.

(2) Provision of better sheds with thorough ventilation for carpenters, smiths, etc., and substitution of *pucca* roofs for the present tiled ones in the old sleeping wards.

(3) Prevention of overcrowding.

(4) Eviction of all cattle from the inside of the jail.

(5) Thorough drying of all grain in the sun for prisoners' use before stocking in the godown or issuing for use.

(6) Regular watering of the jail inside. A few water-carts should be sufficient for the purpose. Jail cattle and prisoner labour will supply the power.

(7) Wearing of cloths over the mouth and nostrils in all dusty forms of labour.

(8) Disinfection of the wards or workshops, as far as practicable, with strong solution of perchloride of mercury where patients attacked have been sleeping or working.

Precautions 3, 5 and 8 are already in force, 6 and 7 are carried out to some extent, but the want of a cart prevents the full advantages of watering, and it is difficult to ensure cloths being worn in all cases except in the gangs in the grain-cleaning sheds, where it is insisted on.

1 and 2 necessitate some considerable outlay, but are, I think, very necessary.

Number 4 would involve small expense, and is an urgently-required reform, especially now when the jail population has so largely increased.

The following officers were in medical charge during the period under report—

Major W J Buchanan, M.B., D.P.H.,—August 1900 to June 1901.

Captain C R Stevens, M.D., F.R.C.S., I.M.S.,—July to September 1901.

Captain E A R Newman, M.D., I.M.S.,—October 1901 to date.

EXPERIENCES IN A CHINESE HOSPITAL.

By T. H. FOULKES,

CAPT., I.M.S.

IN the spring of 1900 I was asked to take charge of hospital for Chinese under the auspices of the British Police Commissioners, Taitai City, Peking, corresponding with that run by Captain Walton, I.M.S., in the Chinese City.

As I had several cases worth reporting, and as I had opportunities for making enquiries into matters of professional interest, I make these my excuses for writing this note.

Having no fluency myself with the "monosyllabic music" I had to get an interpreter and he rather increased than diminished my difficulties. Chinese is a very difficult tongue, but I am not sure if it is more difficult than the interpreter's English. As an instance, I will quote one sentence which I frequently had to ponder over: "He says his chest not thoroughly." I discovered after a time that this meant that he had shortness of breath. The hospital was advertised to open on a certain date, unfortunately this date came round before the supplies had arrived from Shanghai. As it would have been fatal not to have started on the advertised day, a pair of field panniers was borrowed, and work was begun with these. For the first three days all comers were treated with Turpentine or Liquor Ferri Perchloride internally and externally, apparently much to their satisfaction. Among these earlier cases was a man with very well marked lupus erythematosus, who was—*faute de mieux*—treated with a 4 gr solution of zinc-sulphur.

Next time he came he said he felt much better, so it was continued, and in a few weeks he had a large patch of normal skin on each cheek which had previously been covered with the disease. He then stopped attending saying he was well.

My experience of the ordinary run of outpatients was much the same as Captain Walton's (*Indian Medical Gazette*, September 1901).

Tuberculous disease of almost every joint and organ was seen. I suppose this tendency to tubercle is mainly due to the way the Chinese seal up their paper rooms. They are very stuffy and ventilation is unknown.

Skin diseases were very common, most of them due no doubt to the personal uncleanness

of the Chinese. Scabies and eczema were the commonest affections, and, as these readily yielded to treatment, confidence in the hospital was quickly established.

I saw a fair number of cases of cancer, only two, however, were operated on. One, a large epithelioma of the whole lower lip and chin which, together with some glands, was excised, the gap being closed with flap from the cheek. The other, a case of malignant stricture of the oesophagus in an old man aged 73 years, on whom a gastrotomy was performed with success.

The following cases are, I think, interesting—

Axillary Aneurism—A man came, complaining of loss of power and sensation in his right arm. He had wrist drop. On closer examination, it was found that the loss of power was not complete. He had a small amount of control over nearly all the muscles of the arm and forearm, but he could not flex his index finger nor could he work the long flexor of the thumb. There was absolute paralysis of these muscles. A small hard tumour was found in the right axilla just under the anterior fold, and extending deep into the axilla. There were two small scars, one in the front and one in the back fold of the axilla. These, he said, were due to a bullet wound. They were the kind of scars one would expect to see resulting from a clean small bore bullet. On compressing the subclavian the tumour could be reduced in size, but for this it more resembled a fibrous tumour than an aneurism, it was very hard and pulsation could be felt with difficulty. Operation was proposed, and the man left to consult his relations. He never returned. The curious point about this case was the total paralysis of only two muscles—the long flexor of the thumb and the deep flexor of the index finger. It will be remembered that these two muscles are supplied by the anterior interosseous branch of the median nerve given off in the forearm. It is hard to see how the fibres going to form this branch could be specially picked out by a tumour pressing on the main trunks in the axilla.

A well nourished healthy looking young cooly came up one day complaining of shortness of breath on exertion. On looking at his chest the apex beat was seen, rather diffuse, and as far as one inch outside the right nipple. It was thought at first that this would be a case of transposition of viscera; however, on percussion, the left side of his chest was found to be absolutely dull all over. He also had a mitral systolic murmur. He said he had had no illness except a little cough ten months before. There was no redness or oedema over the chest wall nor was there any tenderness anywhere. It was evident that he had a large quantity of fluid in his left pleura. Here was a man, with a displaced heart encroaching on his right lung. His left lung must have been

practically all collapsed, yet he was doing cooly work, and a Chinese cooly has to work hard.

On exploring with a hypodermic syringe pus was withdrawn. The state of his thoracic organs did not seem to justify any large operation, in fact I did not feel very keen on giving him chloroform. There seemed no likelihood of his lung expanding. He was therefore aspirated, the state of his heart being carefully watched. Eighty ounces of pus were let out, and he was put to bed. There was a large quantity of pus left in the chest, but he was beginning to show signs of weakness, so it was not thought advisable to let out more. Next day his lips were a little blue, but, with rest and cardiac stimulants, he soon got fit again, his only complaint being the splashing in his chest. The heart's position was not altered when he left.

I had intended to aspirate him again, but I left soon afterwards. Presumably this was a case of tuberculous pleurisy, but he looked very well in spite of it.

A young man very thin and pale, came up with a sinus two inches internal to his right anterior superior spine of ilium. The probe went in some distance superficially in various directions, so he was put under chloroform and the sinus opened up, when a large cavity over the abdominal wall was found. This was scraped and washed out, three counter-openings being made. There was slight discharge of pus during the next few days, and then he called attention to a "ball" on his back. Two large abscesses were found one on each side of the spine in the lumbar region. They were both opened and much pus evacuated, but no dead bone could be felt. I presume that the abscess on the abdomen was due to his spinal caries, but it was never found possible to irrigate between the two cavities. He was considered too weak for any large exploratory operation and he subsequently died.

A girl aged 17 came with a large cylindrical tumour above and to the outer side of the right breast. The tumour projected about six inches, was two inches in diameter, and had a large mushroom-like fungating extremity, from which blood was oozing. She was said to have had this for four months, and to have lost much blood from it. She was given chloroform, and the tumour was shelled out amidst tremendous hæmorrhage. Two smaller tumours were found by the side of the large one. After the bleeding was stopped, the breast and pectoral fascia were examined and found unaffected. By this time she was nearly collapsed from loss of blood, and the respiration had become sighing. A large enema of salt and water, with a dash of rectified spirit, soon brought her round, and she made a good recovery. Microscopic examination showed the tumours to be pure-spindle celled sarcomata. I do not know from what it originated, pre-

sumably from the skin, though the two smaller tumours were subcutaneous

It was soon found that the history given by patients had to be completely ignored. Most diseases according to their possessors were caused by "the wind hitting them"

One man with a dislocated hip, insisted that this was the origin of his trouble, and nothing more could be got out of him. He stated that on getting out of bed one morning he found his leg in this state, the wind having hit him during the night. I was also unable to reduce his dislocation which was a year old.

Another man was brought in by our police, covered with blood from a scalp wound over the upper frontal region. He stated that three robbers had set on him and on his refusing to part with his property, which probably was not worth quarrelling about, one of them had struck him on his head with a sword. This was not an uncommon occurrence, and it seemed a likely story. When I saw him, the wound had been washed and dressed by the Chinese doctor (a mission graduate whose services had been lent by the S. P. G.).

The bleeding had stopped and his temperature was normal, so I left him alone.

However, after four days the temperature rose, and on probing the wound, something smooth was felt at the bottom of it. He was put under chloroform, and the skull was exposed when an oval hole through the bone was found. This was about $1\frac{1}{2}$ inches long, $\frac{1}{2}$ an inch broad, in the middle of this was a peg of glass, tightly fixed, and broken off flush with the bone outside, but penetrating the dura mater and brain for nearly $\frac{3}{4}$ inches. It looked like a piece from a broken beer bottle. The glass was removed with difficulty, and a button of bone was removed by trephine on each side of the fracture. Some small splinters of glass and bone were cleared out. The dura mater was black under the seat of the fracture. This man died of septic meningitis, but declared to the last moment of consciousness that a robber had cut him with a sword, and he knew nothing about any glass.

I saw one well-marked case of spastic paraplegia. He was a big man about 40, and was brought in supported by two friends. As he came in he brought to mind at once the pirate swash-buckler of the provincial theatre. His back was slightly arched, his chest well forward, and his head thrown back; with this there was an exaggerated swagger, a peculiar rolling gait. He had a prominent red nose too which added to the effect. The knee jerks were much increased, and there was ankle-clonus. No loss of control over bladder or rectum. No sensory or speech defects. He and his friends stated that he had been quite well up to six months before.

It may be of interest to mention two customs practised in China, *viz.*,—foot-binding and the making of eunuchs, regarding the first I had

several bad cases of ulceration and necrosis of bone from bad binding. On enquiry, I was told that this practice is begun at the age of about 7, when the girl's muscles are fairly developed. There are professional foot-binders who do the work as a rule. In all the cases that came under notice the mothers, from motives of economy, had gone in for amateur bandaging, and with disastrous results. The effect, in a properly conducted case, is to stunt the growth of bone and bring about an exaggerated condition of Pes Cavus. The weight of the body in walking, or rather in waddling, is borne on the os calcis which is bent forward.

The victim really walks like a person who has undergone Pirogoff's amputation. The eunuchs are made for the Imperial Palace. I had the opportunity of examining one who was attending for phthisis. With the idea of making things quite safe, the men or boys (for both are converted) are deprived of both testicles and penis. The one I saw had a stump of penis about half an inch long. I was informed that the parts are preserved in a special building and, on the death of a eunuch, they are called for and buried with him. Whether each gets the organs originally grown by himself is open to question.

The operation is performed by one of the senior eunuchs, and being, as far as I could ascertain, the only surgical operation practised by the Chinese, it is as simple as one could expect. A string is tied round the penis and scrotum close to the pubes and they are cut off beyond this. I was told that death not uncommonly results. For a country boasting of such an old civilization one would expect to find some interesting remnants of knowledge concerning our art among the Chinese, such, however, seem to have no existence.

Chinese practitioners seem to vie with one another to produce the filthiest "remedies." Apparently faeces and urine of various animals, including human beings, form the basis of most of their prescriptions.

Apart from these faecal exhibitions the only treatment they have to fall back upon seems to be needling. Many patients came to hospital who had previously undergone native treatment. This consisted in passing long needles into their interiors, usually into the different regions of the abdomen. The theory is, that diseases are caused by the residence of devils in internal parts of the body who cause the various symptoms by their activity. These devils are not necessarily in the diseased parts. The art then is to locate the devil and discourage him by prodding him with needles. I was told that the needles were passed in several inches deep, and one may imagine what complications might be found in operating on a case of abdominal tumour that had been treated by a Chinaman. Yet I was told in a very patronising way by a mandarin who came to visit the hospital that

all the wonderful operations we did we had learnt from a gentleman who flourished in the Han dynasty. How the knowledge had been lost he could not explain. My interpreter, however, told me that the reason was, because the rich men who might learn, ruin themselves body and mind by opium smoking and other vices, "but clever men like me are poor."

I must apologise for bringing in the personal element, but I cannot refrain from giving my interpreter's parting speech. He had evidently been persuaded to say something nice to me, and this is how he did it. He said "the people are very glad you have worked in this hospital, you have been very kind, you are quiet with them," and then, with a smile, he raised his voice to a shout of triumph at having got the right word "you are *tame*."

Having said so much in the first person, I feel bound to mention that I received the greatest help from Lieutenant-Colonel Ramsford, R.A.M.C., and Lieutenant Megaw, I.M.S. These officers were always ready and willing to help me with advice or assistance at the shortest notice.

THE INUNCTION TREATMENT OF SYPHILIS AS CARRIED OUT AT AIX LA CHAPELLE

BY C. C. BARRY,

CAPTAIN, I.M.S.

THE treatment of syphilis by inunction of mercury is seldom nowadays resorted to, on account of the method being both troublesome and messy, but it occasionally happens that this is the only form of administration by which a patient can take mercury. Most patients, it is true, can take mercury by the mouth, but it happens I think more frequently than many are aware that mercury given by this method produces diarrhoea and other disturbing symptoms to such a degree as to necessitate its abandonment. I met at Aix-la-Chapelle a considerable number of patients suffering from syphilis, who told me that they had been obliged to give up taking mercury by the mouth for the above-mentioned reason. The symptoms produced were chiefly of the nature of diarrhoea, and this, in spite of the combination of the mercury with opium. The patients had all been under the care of medical men, and had given the method of administration of mercury by the mouth a fair trial.

While home on leave I had occasion to accompany a relative suffering from syphilis through a course of treatment by inunction both at Aix-la-Chapelle and at Harrogate, and my experience at these places may be of interest, more especially as I found great difficulty in finding out any details as to the technique of this method of treatment before going to Aix-la-Chapelle.

Some details are, it is true, given in the last edition of Jonathan Hutchinson's Handbook on Syphilis, but one or two details which I believe to be of importance are omitted. It is by attention to these details which makes the inunction method of administering mercury capable of being easily and successfully carried out.

The following are some details I believe to be of importance.—First as regards the ointment used for inunction, this is usually the unguentum hydrag of the British Pharmacopœia in cold weather, at any rate this is as a rule too stiff for thorough inunction, and requires to be made thinner with vaseline. This can easily be managed at the time of rubbing in the ointment, though at Aix-la-Chapelle it is usually done for one by the chemist, a very little practice soon teaches one the amount of vaseline suitable.

The amount of ointment rubbed in at a time varies from one to two drachms, the smaller quantity is begun with for four or five days, and then, if no symptoms of mercurialism appear, the quantity is increased. As a rule, however, the amount is not increased beyond one and a-half drachms. Occasionally if it is desired to produce the effects of mercury quickly the amount rubbed in is increased to two or three drachms given by two rubbings daily. Dr Meyer, who has had 40 years' experience of the inunction method at Aix-la-Chapelle, told me he was not in favour of the patient rubbing in more than a drachm and a half of the ointment at a time, nor of ordering more than one rubbing a day.

I have seen considerably larger quantities of mercurial ointment rubbed in daily than those mentioned above, but I have not been able to satisfy myself that any real benefit resulted.

It is part of the routine treatment at Aix-la-Chapelle to use a strong menthol and alum mouthwash very frequently throughout the day, and by this method symptoms of salivation from mercurialism are retarded, but other symptoms are apt to occur if mercury is given in these large quantities. These symptoms, namely, quick irritable pulse, slight tremors, and occasionally albumin in the urine have to be carefully watched for, and on their appearance the dose of mercury at once reduced.

In two cases where the so-called double rubbings were administered, the patients lost condition, and got quick and irritable pulses, and they both had to discontinue the treatment.

The method of inunction is as follows.—The patient takes a hot bath of sulphur water in which he stays for 20 minutes to half an hour; after which the ointment is well rubbed in for 15 to 20 minutes, the clothes are then put on, and the ointment kept on till the bath the following day when the ointment left is washed off with soap and water. Definite parts of the body are rubbed daily in rotation, the great point being to cover each day a large surface of skin.

The body is divided up in the following manner (a) both legs from the knees to the ankles, (b) both thighs down to the knees, (c) both sides and front of the abdomen, (d) back and axillæ, (e) both shoulders and arms. For patients who desire to rub themselves the body can be divided into the following three portions, (1) both legs from the knees downwards, (2) both thighs, (3) both sides, front of abdomen and the axillæ.

The ointment should be firmly but not too roughly rubbed in, and the hairs on the parts rubbed should be either shaved off or cut quite short with scissors. If this latter detail is omitted, the hair follicles will become inflamed by the friction of rubbing and a copious crop of small pustules will result.

These spots give rise to much discomfort, and may necessitate the rubbings being abandoned for a week or more.

In fact the skin must be carefully watched, and powder and lotions used freely should any signs of inflammation of the hair follicles appear.

As a rule if the above-mentioned details are observed the skin does not get irritated, and it is quite possible to rub regularly for months without any inconvenience.

The bathing is carried out regularly one bath a day, the temperature of the bath-water is kept at 97°–100°F, and the patient stays from 20 to 30 minutes in the bath. What the actual effect of the bathing is, I am unable to say, nor could I get any definite information on this point, but there is no doubt that combined with the drinking of the medicated water it does an immense amount of good in cases of skin and joint affections.

In fact in the latter cases the results are often little short of marvellous.

It appears also there is some ground for believing that a course of bathing and drinking enables patients to take a larger amount of mercury without producing symptoms of mercurialism. The quantity of water drunk daily is three or four glasses of 8 ounces each.

The amount of chemicals in the water is small, and I was informed by Dr Meyer that he places less importance on the drinking of the waters than on the other routine of the treatment.

The length of the course of treatment varies with the severity of the symptoms of syphilis displayed, but as a rule should not consist of less than from 40–50 rubbings. The doctors I met in Aix-la-Chapelle in no way claimed that they cured syphilis by one visit, they all said that, as a rule, a second if not a third visit for a course of treatment was necessary. The plan they recommended was a first course of 40–50 rubbings, then a rest for four to five months

during which no treatment whatever should be taken. At the end of this time another visit for 20 or 30 rubbings, then again another rest without treatment of five or six months, followed by a third visit for 14–20 rubbings. If possible the patient should spend a fortnight at some bracing locality at the end of each course of treatment.

After a course of treatment such as described it is maintained the patient will, in most cases, be quite cured of his ailment. The treatment therefore is really a prolonged one, and does not differ in this essential from other methods.

Such a course of treatment is, of course, expensive, and entails such an absence from work that many patients are unable to avail themselves of it, but though the baths and the drinking of the waters certainly do in some way appear to aid the treatment, they are not, I believe, essential to its success.

Ifunction of mercury is persevered with at home, most excellent results can be obtained if the details mentioned above are observed, and the routine can be carried out with less trouble and inconvenience than might be expected. It will necessitate, however, taking a daily warm bath and rubbing in mercurial ointment for 15 minutes. The ointment naturally soils the vests and drawers, but it washes out easily with soap and water and does not permanently injure the garments.

Though I in no way advocate the inunction over the other methods of taking mercury, it will be found most suitable for patients who cannot take this medicine by the mouth, and I was much struck by the improvement which took place in cases of an obstinate nature which had resisted all previous treatment.

The course of treatment in its entirety can be carried out either at Harrowgate in Yorkshire, or at Aix-la-Chapelle, though I am bound to say the latter place, on the whole, appears to be the best. More time and attention seems to be paid to patients suffering from syphilis, and in consequence the facilities for treatment are greater and the expense less. The baths also at Aix-la-Chapelle are situated in the hotels themselves instead of in two large central buildings as at Harrowgate, this being naturally a very great advantage should a patient have to go through a course of treatment in winter, or if the manifestations of syphilis are such as to render walking undesirable.

Both the baths and the fees for the rubbers are cheaper than at Harrowgate, as also is the general cost of living. The cost of the various items of the treatment are contrasted below—

	Aix la Chapelle	Harrowgate
Baths	One mark and a half	2/6–3 shillings.
Rubber	One mark and a half	Two shillings
Water	Free	Three pence a glass or six pence a day
Hotel expenses	10–14 marks a day	Varies greatly, generally more.

A Mirror of Hospital Practice.

PROCIDENTIA RECTI—EXCISION AND SIGMOIDOPEXY

By D M MOIR, A M., M D.,

MAJOR, I M S.,

Offg Surgeon Superintendent, Presidency General Hospital, Calcutta

THE Surgeons of the Medical College Hospital, Calcutta, have been pioneers in the operative treatment of this distressing and otherwise intractable complaint. Sir F. Tieves* quotes the operations of no less than three Calcutta Surgeons of the Indian Medical Service, viz., Surgeon-Major S. Partridge (1870), Colonel D. O'Connell Raye (1886), and Brigade-Surgeon K. McLeod (1890). A summary of their methods may prove not uninteresting as a study in operative evolution.

(1) *Surgeon-Major Partridge's case*—A native weaver, *æt* 40, was admitted to the Medical College Hospital on 21st April 1870, suffering from an irreducible prolapse of the rectum, the size of a full-term foetal head, which had its origin seven years previously as a sequel to severe and long-continued dysentery. Attempts at reduction having proved fruitless, the following operation was performed on 18th June 1870, after consultation with Sir Joseph Fayrer. A series of silk ligatures were passed, by means of a curved needle with the eye near the point, from within the lumen of the prolapsed bowel outwards. The whole circumference of the bowel was thus apportioned into segments by the ligatures, which were firmly tied, and thus the protrusion was effectively strangulated without occluding the lumen of the gut. The prolapse was then excised an inch below the line of ligatures, when it was discovered that the lower end of the recto-vesical pouch had been included in the excised mass. No peritonitis nor bladder trouble followed, and the case progressed favourably until 1st July 1870, when tetanus supervened. The slough included within the line of ligature-strangulation separated completely, leaving a healthy granulating surface, but the patient succumbed to tetanus on 14th July 1870, *i.e.*, nearly a month after operation. The *post-mortem* revealed no sign of pelvic peritonitis. "The history of this case," as Surgeon-Major Partridge remarked † "fully justifies a resort to operative interference."

(2) *Colonel O'Connell Raye's case*‡—A male Hindu, *æt* 44, was admitted to the Medical College Hospital in 1886 with an irreducible prolapse of the rectum, the size of a clenched fist, and of several days' duration. Reduction having failed, an operation was performed on much the same principle as that adopted by

Surgeon-Major Partridge. The protrusion was amputated at the level of the encircling skin, after a ring of silk ligatures had been introduced with a Wood's hernia needle, and the mass then firmly secured in segments. There was this difference, however, that Colonel Raye sought for, dissected out and isolated the recto-vesical pouch of peritoneum before he excised the rectum below the line of encircling ligatures. Since two of the ligatures had transfixed the peritoneum he cut them, freed the peritoneal sac, ligatured its neck above the level of the punctures with carbolised catgut, cut off the sac and returned its pedicle into the pelvis. The result was most successful. The bowels acted naturally on the third day, there was no trouble with micturition, the ligatures came away on the 12th day when control over the bowel was complete, and the man left hospital on the 21st day without permission, as he felt confident of his cure.

(3) *Brigade-Surgeon K. McLeod's case**—A delicate Hindu lad, *æt* 19, was admitted to the Medical College Hospital with aggravated procidentia recti of eight years' duration. The prolapsed mass was 6 inches long, and from 11 to 12 inches in circumference. The sphincters were relaxed to an extreme extent. An attempt to obtain cicatricial contraction by linear cauterisation proved abortive. Brigade-Surgeon McLeod then altered his *modus operandi*, and the site of operation, by adopting what he calls the principle of Alexander's operation for procidentia uteri, and he determined to try and prevent the recurrence of prolapse by fixing the upper part of the rectum above the pelvic brim. The Alquié-Alexander-Adams operation is, of course, the raising of the uterus by shortening the round ligaments, and differs widely from McLeod's rectal operation. The uterine operation, analogous to McLeod's, appears to be abdominal hysteropexy performed *through the peritoneum* after dissecting down on it *without opening it*, as suggested by Caneva† twenty years ago.

Brigade-Surgeon McLeod performed the following operation—The prolapse having been reduced, the left hand was passed up the bowel until its fingers reached the sigmoid flexure and were prominent above Poupart's ligament. Next, a long steel acupuncture needle was passed through the abdominal parietes 1 inch above and parallel to Poupart's ligament. The point of the needle pierced the gut somewhere about the upper part of the rectum or lower part of the sigmoid flexure, traversing it guided by the finger inside, and emerged again through the skin $\frac{3}{4}$ inch from its point of entrance. A second needle transfixed the bowel and abdominal wall 3 inches higher up. An incision was then made between the two needles in the long axis of the bowel, and the *parietal peritoneum* was exposed but not opened.

* *Manual of Operative Surgery*, pp 685, 687, Vol. II of the 1891 edition.

† *Indian Annals of Medical Science* Vol XXVII, 1870.

‡ *The Lancet*, p 72, 10th July, 1886.

* *The Lancet*, p 117, 19th July, 1890.

† *Gaz degli Ospiti*, p 810, 20th December 1882.

The left hand was again inserted into the rectum to guide the insertion of silk sutures through the serous and muscular layers of the gut. Two series of sutures were introduced with a handled needle in parallel lines of four loops of silk on each side. The sutures were applied at intervals of an inch. The wound in the parietes was closed by horse-hair sutures. The steel pins were removed at the end of 24 hours, and the horse-hair sutures on the 9th day. Recovery was satisfactory, and a perfect cure was effected.

In quoting this case Sir F. Treves* remarks — "Dr. K. McLeod has carried out the operation of stitching the upper part of the rectum to the anterior abdominal parietes, a wound having been made through the abdominal wall for the purpose. In the single case recorded, a good result followed this very extreme measure."

With all due deference to such a high surgical authority I deprecate the phrase "very extreme measure" as tending to discourage others from resorting to a brilliantly successful procedure, and I submit that the operation may be performed with certain modifications and precautions which render it no more formidable than a simple laparotomy. The misery of the sufferer is so acute and so prolonged, and the condition has proved so little amenable to a variety of futile expedients, some rather barbarous, which have been dignified by the name of treatment, that it is quite worth while and justifiable to run a slight risk to obtain permanent relief from what the unfortunate patient regards in the light of a shameful as well as a painful affection. With the ordinary precautions that every surgeon now adopts for abdominal operations, I believe that an inguinal laparotomy with sigmoidopexy involves less risk and shock than excision of the prolapsed part of the rectum. *Irreducible complete procidentia recti*, as in the cases of Partridge and Raye, naturally requires excision, which operation is perhaps simplest performed in the manner described by Sir F. Treves†. But sigmoidopexy is an operation which should not be casually set aside in severe cases of *reducible complete procidentia*, because it may produce satisfactory results without a tithe of the troublesome precautions required for the after-treatment of a case in which excision has been practised. The idea of sigmoidopexy for prolapse I owe to Brigade-Surgeon McLeod, I.M.S., from whom I learnt it in 1892 while serving under him as resident surgeon at the Medical College Hospital. Such modifications as I made in the operation performed by me are merely the outcome of improved methods common to all surgeons alike.

(4) *Major Morrison's case of Sigmoidopexy* — A male Hindu, *æt* 42, a weaver by trade, was admitted into the General Hospital, Chit-

tagong, in a most pitiable condition on the 16th October 1900. He was weak, emaciated and very anæmic. Partial prolapse commenced a dozen years previously, and had by degrees become *complete*. It may be noted that the man's occupation, age, etc., closely resemble similar particulars in Surgeon-Major Partridge's case. On admission the prolapse was found to be extensive, complete, and intensely congested, because the patient had been unable to retain it for many days. About eight inches of mucous surface were exposed as a tense, raw, excoriated, ulcerated and bleeding mass. It was not an easy matter to effect reduction of the prolapsed bowel under chloroform. For over a fortnight he was kept quiet and allowed to gain strength. During this period the prolapse recurred with each evacuation, though the patient experienced no such difficulty in reducing it as had driven him to seek aid in hospital.

Operation on 6th November 1900 — A two-inch incision was made a little internal to the anterior superior iliac spine, the muscular layers were separated according to the direction of their fibres, the peritoneal cavity was opened, and the index finger was inserted to search for a bougie introduced *per anum* and held by an assistant. The sigmoid flexure was thus quickly found, hooked up by the finger, and fixed by two stout catgut sutures to the inner and upper side of the wound in the abdominal wall, — gentle scarification of the visceral and parietal peritoneum having first been done to promote adhesion. The sutures pierced the peritoneal and muscular coats, but of course the mucous lining was left intact. The peritoneum was closed by catgut suture, the transversalis and internal oblique were brought together by silkworm gut. The external oblique was joined by strong catgut, and the skin incision was closed by interrupted horse-hair sutures. For the first day he was given one grain of opium every four hours, three grains in all the second day, the same on the third, and for the fourth and fifth days two grains on each day. All this time there was no fever nor tympanites. On the sixth day his bowels were moved by castor-oil emulsion, without any prolapse. On the seventh day he was dressed for the first time, when the abdominal wound was found healed. The progress of the case was uncomplicated and quite uneventful. There was never any sign of a return of the prolapse. The patient was induced, rather against his will, to remain on in hospital until the 9th December 1900, *i.e.*, over one month after operation, when he returned home at his own request. During the last ten days of his stay he went about helping with the ward work. He was examined on the day of his discharge, when the rectum was seen to be quite healed and healthy, and there was no tendency to prolapse on his bearing down.

* Treves, *loc cit*

† *Manual of Surgery*, Vol II, p. 689, and case 3 in *The Lancet*, 1st March 1890

ENCYSTED VESICAL CALCULUS AFTER GUNSHOT WOUND OF THE BLADDER

BY J H HUGO, D.S.O., M.B., B.S. (Lond.),

CAPTAIN, I.M.S.,

Officiating Residency Surgeon, Nepal

A PATHAN from Upper Swat, age 24, presented himself at Mardan Civil Hospital in September 1898 complaining of symptoms of vesical calculus. He gave the following history—

Five years ago, in a tribal feud, he had been shot with a jezail bullet in the left side of the abdomen, the bullet passing out through the right buttock.

There were no intestinal symptoms, but for two years there had been a free discharge of pus with some urine from the abdominal wound. The discharge gradually decreased and, for nearly one year before coming to Mardan, had ceased altogether, the abdominal wound healing up.

For two years he had passed a little blood in his urine and had occasionally suffered from stoppage in the flow.

There was always some pain in the lower part of the abdomen, and after emptying the bladder, there was such acute pain in the region of the abdominal scar radiating down the inner side of the left thigh, that he had to lie down for a time and looked forward with dread to micturating.

On examining the abdomen I found, on the left side, about one and a-half inches above the junction of the outer and middle thirds of Poupart's ligament, a puckered scar, from which a small sinus ran backwards and towards the middle line for half an inch, there was no discharge from this, and no pain.

On the right buttock was a large scar where the bullet had made its exit.

The right gluteal muscles were a little wasted. While patient was in hospital, I saw him pass urine, he squatted on the ground in the usual position affected by natives of India, urine flowed away easily, but towards the end of micturition he complained of severe pain in the region of the bladder radiating up to the abdominal scar and down the inner side of the left thigh. After micturating he at once lay on his back with both legs drawn up to ease the pain, and beads of perspiration stood out on his forehead, the left testicle was retracted. This paroxysm lasted rather less than two minutes and then gradually passed off, when the patient got up and walked about seemingly quite well again.

Urine contained a quantity of pus and excess of phosphates. On passing a sound, a small calculus was detected free in the bladder, on further exploration a calculus was felt fixed on the left bladder wall—a diagnosis was therefore made of two calculi—one free in the vesical cavity and one encysted.

The patient had come five days' journey on foot in order to be operated on, but expressly stipulated that if the operation could not be performed without cutting, he was only to be cut from "underneath" and not from "above."

The difficulties attending such a procedure were represented to him, but, although he wanted to be relieved at once, he refused to allow a suprapubic cystotomy to be performed on any account, giving as his reasons that a man he knew on whom this operation was performed had died, also that a scar "underneath" would not be visible. No amount of persuasion could shake his determination, so the only choice was a lateral lithotomy.

This operation was performed, and a small stone, weighing 30 grains which was free in the bladder, extracted. On the left bladder wall a stone, about the size of a hazel-nut, was felt protruding into the vesical cavity, this was tightly gripped at its neck and attempts were made to extract it by means of lithotomy and laryngeal forceps, scoops, &c., but failed. A long pair of sinus forceps were then inserted into the sac round the neck of the stone, and attempts were made by opening the blades to dilate the opening sufficiently to extract the stone, this method also failed.

Lastly, the edges of the neck of the sac were very carefully "nicked" by means of a probe-pointed bistoury, and the stone was extracted with laryngeal forceps.

On examining the interior of the cyst with a sound another stone was detected, this was easily extracted with a scoop aided by abdominal pressure.

On palpating the abdomen a cord-like process could be felt running from the abdominal scar down to the cyst.

The three stones weighed 31 grs xxx

The stone which protruded from the cyst was somewhat dumb-bell shaped, the end which protruded into the bladder was much the smaller—about the size of a large hazel-nut—the intermediate part was slender and had been very tightly gripped by the mouth of the cyst, the part within the sac was faceted and the size of a large walnut, the stone in the deeper part of the cyst was correspondingly faceted.

All the stones were phosphatic, the nucleus of the stone in the deeper part of the cyst was a very small splash of lead and a piece of black cloth which had probably been carried in by the bullet. No nucleus was found in the other calculi. Patient made an uninterrupted recovery and left the hospital 18 days after the operation.

Three years later I had an opportunity of again examining this patient who came to see me in Peshawar, he professed to be quite well and passed urine painlessly.

I sounded him, but could detect no stone, his urine contained a very small quantity of pus.

SUPPURATION IN CONNECTION WITH A SIMPLE FRACTURE OF THE FEMUR

By B CHATTERTON, F.R.C.S.I.,
Civil Surgeon, Gaya

THE following case presents some points of interest

A man was admitted into Gaya Pilgrim Hospital on 28th June 1902, having fallen from a palm tree. He was suffering from a severe compound fracture of the right humerus, and a simple fracture of the right femur high up. In my absence, Assistant-Surgeon Surendra Nath Neogi amputated the arm which was nearly severed, and put up the thigh in Liston's long splint with an extension stirrup.

The stump healed by first intention, and the whole case ran an afebrile course throughout. After some days I noticed that the man was becoming thin and poorly, and so decided to put him into plaster and let him up. I accordingly removed the splint and, on doing so, found a brawny swelling occupying the upper and inner portions of the thigh. I thought this was probably due to some tightness of the bandages or perineal band. I accordingly decided to wait a few days and applied evaporating lotion and put extension from the lower part of the thigh, keeping the leg straight with sand-bags.

Examining again on 21st July, I found, to my surprise, a fluctuating and tympanic tumour occupying Scarpa's triangle and the adjacent inner portion of the thigh. I at once thought of a femoral hernia, as there was a distinctly intestinal note over the swelling, and a smart tap with the fingers made it evident that there was both fluid and gas contained in it. Further out, however, the thigh appeared rounded, and there was obvious fluctuation. I therefore decided to open into the swelling and accordingly made an incision about three inches in length on the outer and anterior aspect of the thigh. On cutting through the fascia lata, quantities of green and offensive pus, with gas, escaped. I estimate the quantity roughly at about two pints. I then enlarged the opening upwards and explored the state of the bone with my finger. I found the fragments were not in apposition, in spite of heavy extension and the long splint. The lower end of the upper fragment was tilted outwards. This was rectified, and a drainage tube introduced. The record of the case here unfortunately ends as the man was removed by his people on 22nd July, still having no fever and to all appearance improving.

The points of interest are, I think—

- (1) Suppuration occurring in connexion with a simple fracture
- (2) A very large abscess forming without any febrile disturbance
- (3) The union by first intention* of an amputation for a compound fracture when the latter was the only evident route by which micro-organism can have entered the body.
- (4) The absence of septic osteo-mylitis.

A NEW OPERATION FOR ENLARGED SPLEEN

By E R ROST,
CAPTAIN, I.M.S.,
General Hospital, Banquon

THE idea of this operation for the encouragement of the reduction of an enlarged spleen in enlargement of that organ due to chronic malarial fever or associated with cirrhosis of the liver, is that collateral venous circulation between the splenic veins and the veins of the abdominal wall will be instigated, and the circulation of blood through that organ be thereby improved.

I have found that the gastro-splenic omentum hypertrophies with the spleen and is therefore to be found near the edge of the spleen as it enlarges downwards and to the right, there is therefore no difficulty in fixing it to the abdominal wall in these cases, and it is presumed that such fixation would not interfere with any recession of the organ, whereas adherence of its capsule to the parietes would tend to prevent the organ from becoming smaller. In the two cases I have tried this idea on, there was very marked reduction in the size of the spleen within a few weeks after the operation.

The first case was a North-Eastern Shan, on whom I had operated in Mandalay for cirrhosis of the liver by omento-ventral fixation three months previously, the result of which operation as far as the ascites went appeared absolutely successful. But it had not apparently reduced the size of his spleen, which extended well over towards the right iliac region.

An incision two and a half inches long just over the upper border of the spleen in the middle line was made, and the gastro-splenic omentum brought out, two continuous silk-worm gut sutures were passed through it several times and brought out through the abdominal wall by a long curved needle on handle, to the left of the incision, so that about eight square inches of the omentum would be in contact with the abdominal wall.

These long sutures were removed on the sixth day, and the wound healed by first intention. The man was discharged five weeks after the operation with a spleen less than a third the size. No medicines were given, there was no recurrence of the malarial fever, which repeatedly attacked him before the operation.

In the second case precisely the same operation was performed, the man was a Hindu with a spleen extending two fingers' breadth beyond the right of the middle line, the spleen reduced rapidly in size, and the man left the hospital seven weeks after.

Both patients improved in general condition and were markedly less anæmic.

It appears to me that this idea might be given a further trial, and especially in those cases of enlarged spleen associated with cirrhosis of the liver.

THE
Indian Medical Gazette.

SEPTEMBER, 1902

THE GIGANTIC ANTI-PLAGUE CAMPAIGN
IN THE PUNJAB

"THERE REMAINS ONLY INOCULATION"

IN these fateful words the Government of the Punjab sum up their review of the measures which have been hitherto taken in that Province to combat plague. The Government Resolution in which these words occur is perhaps the most notable document which has yet been penned on the subject of plague in India. It launches a gigantic experiment, devised on the most strictly modern lines, and on a scale hitherto unapproached by sanitary effort in any civilised country.

To devise a scheme for the inoculation against plague in five short months of a population of no less than 6½ millions speaks volumes for the pluck, resolution and foresight of Sir Charles Rivaz, and of his medical and sanitary advisers.

It is easy to criticise such a gigantic scheme, it is easy to point to previous experiences on a minor scale, it is easy to shake the head and to make cheap prophecies. We prefer to avoid this, and rather to do all we can to forward and support an enterprise of such a nature. A brief history of the fell disease in the Punjab shows that no other alternative is left, unless with oriental indifference the Government of that Province was to fold its hands and look on.

The Punjab, during the past six plague-stricken years, had practically escaped, all except a couple of districts, up to 1900. From 530 deaths in 1899-00 the disease rapidly rose to over 6,000 in the next year, and in the official year 1901-02 the number of deaths rose to the enormous figure of 200,000. Such a rapid increase is, we think, utterly unprecedented even in the history of this great disease. Desperate diseases need desperate remedies, and up to the present time all previous measures dictated by science, experience or policy have failed. As the Resolution says "the measures which it is possible to take are limited by the present extent of the disease in the Punjab, by the policy of non-interference

announced by the Government of India, by the resources of men and money available for plague work, and by the attitude of the people."

Segregation under the strict conditions alone useful is out of the question, evacuation of infected centres is futile, because the people do not and will not put up with its drawbacks in spite of its great compensatory value. Disinfection must be put also on one side, because of the dislike to it of the people, and still more on account of the physical impossibility of *disinfecting millions of houses*. Cordoning of villages is equally impossible, and at any rate we could not cordon the rats.

"THERE REMAINS THEN ONLY INOCULATION"

Now the first thought that arises in the mind of the reader of this resolution is—what will the attitude of the people be on this point? This is the vital question of all plague, and indeed in India, of all sanitary administration. There is no need for people at home to point the finger of scorn at the people of India, when we remember that in the closing years of the 19th century a Conservative Government introduced a "conscience" clause into their Vaccination Act. Experience of inoculation in India has been of a varied kind. In many places it has been carried out in a very thorough way, in others it has met with the fiercest opposition, culminating in serious rioting and murder. On this crucial point, the one on which the whole success of the great experiment turns, the Government Resolution says—"The Punjab Government considers that the experience which has been gained of the protective effects of inoculation and the practicability which has been proved of inducing the people of the Punjab to submit to it extensively, in anticipation of an outbreak of plague, point to inoculation as a measure on which considerable hope and reliance may be placed."

In view of these weighty words, based, as they must be, on the recorded views and opinions of the medical men who have worked for several years in the plague-affected districts, and who will now have to carry out the proposed work, it is useless to point to individual experiences or to attempts to carry on inoculations at other times and places.

The men who devised this great scheme know as well as anyone else does the difficulties of inoculating a whole people. "Inoculation," says

the Government Resolution, "is making such way and winning such favour among the people, that in April last, without the provision of special facilities or the making of special efforts, 50,131 persons submitted to the operation in the Punjab, in spite of the fact that harvest work made inoculation inconvenient to many, and that the epidemic was approaching its decline."

The Punjab Government is, therefore, confident that, by judicious preaching of inoculation, and by affording every opportunity for it at the hands of medical practitioners whom they can trust, a large portion of the infected tracts can be inoculated (and we add thereby protected), in anticipation of the next outbreak. We need say nothing here of the protective value of inoculation, nor of the fact that it can be harmlessly performed. These are points long ago thrashed out and on which professional opinion may be said to be practically agreed.

There remains now only to briefly note the means whereby this great experiment is to be carried out.

The inoculation campaign is to be carried out in the thirteen districts, which, having suffered most, may well be considered most ripe for, and most ready to receive this great boon. The population of these districts is ten millions, and it is hoped to inoculate two-thirds of this number in the five months from 1st September to end of January. It is calculated that each operator will be able to do 700 inoculations a day for 24 days in each month. This is quite possible, we understand, and the number has even been exceeded. To do this will need not less than 77 full-time inoculators. To meet this demand fifteen Indian Medical Service officers will be deputed, one in chief charge of each district, and two as a small reserve, several other medical officers and medical men are available, and it is proposed to obtain 37 temporary medical men from England on a nine months' engagement on the pay of Rs 750 per mensem, with free passage, first class, out and home. In fact the whole cost of the campaign is calculated at Rs 9,86,400. Captain E. Wilkinson, IMS, FRCS, a very experienced officer, will be chief plague medical officer in charge. The above bold and comprehensive scheme has received the sanction of the Secretary of State.

In conclusion, we can only express our earnest hope for its success. It is an experiment worthy

of an enlightened Government, and one to which the attention of sanitarians all over the world will be drawn, and which will be followed by them with hope, interest, and expectation of success.

LONDON LETTER,

THE KING'S ILLNESS

THE dramatic suddenness with which the news of the King's serious illness burst upon the Kingdom constituted a very memorable experience. All preparations had been matured for a splendid spectacle or rather series of spectacles and great public rejoicing when, on the eve of the event, like a bolt from the blue, came the startling intelligence that His Majesty was dangerously ill and that a formidable surgical operation had to be performed without delay. This was on Tuesday, the 24th of June, and on the same day the operation was done—skillfully and successfully. All sorts of speculations were afloat as to the nature and cause and probable consequence of the emergency, and evil reports and gloomy forebodings were in very unpleasant evidence. The plain truth was soon made known without reservation. A large and deep abscess in the right iliac fossa caused by appendicitis had to be laid open, and from its depth and the stoutness of its subject the necessary incisions had to be free and bold. The progress of the case has been all that could be desired. Local and constitutional conditions have been favourable, and yesterday afternoon, while cruising on the Solent I saw the Royal Yacht with the august patient on board enter Cowes road amidst the booming of cannon and fluttering of flags. The Coronation will take place early in August and though, perhaps, inferior in magnificence to what was originally intended and arranged, it will be associated with heartfelt thankfulness for the recovery of the very popular representative of a great dynasty. The medical profession has gathered laurels from this historical incident, and the honoured name of Lister has been on every tongue, both on account of the operation, to which his previous labours have contributed assurance of success, and on account of his personal participation in the management of the case.

DR GARNAULT'S EXPERIMENT

In a former letter I alluded to Koch's views on the subject of the infectiveness of bovine

tuberculosis on man I also referred to two medical men in America and France who proposed to test the matter by personal experiment. Nothing more has been heard of the American, but the Frenchman has carried his intention into execution. It appears that about three weeks ago Dr Garnault blistered his arm and applied tuberculous beef to the raw surface. Local signs of infection are said to be observable, but no general symptoms have—so far—declared themselves. If after the lapse of two months the experiment does not give rise to positive result, it is reported that he intends to repeat it in a more thorough manner by making an incision and applying the material to the cut surface. Meantime he is lecturing on the subject of bovine tuberculosis for the benefit of the sufferers from the Martinique disaster. If Dr Garnault obtains positive results, he will supply strong but by no means conclusive evidence in disproof of Koch's views, on the other hand if he fails to cause tuberculous infection by the methods which he employs, it will by no means follow that all human subjects are insusceptible of infection by bovine tuberculosis. In either case the result will be prejudiced by the fallacies which attach to single experiments on a complex and complexly conditioned question. In this connection it is satisfactory to read that consumption is on the decrease in New York. The system of notification has for sometime been in practice in that city, and has enabled the health authorities to deal with tuberculous cases in such manner as to reduce greatly the chances of infection.

A HEAT WAVE

We have recently been suffering from a heat wave which has spread extensively over Europe and America. On the 14th of July there was a military review at Long Champs near Paris, at which some 450 soldiers suffered from sunstroke. A similar experience occurred at Aldershot in 1900, which resulted in 69 seizures and several deaths and occasioned a very acute sensation at the time. Unexpected tropical conditions in temperate countries are apt to cause serious disasters on account of the absence of proper precautions. In some instances the effects are very severe. In 1900 a heat wave passed over the Argentine Republic, lasting from 1st to the 13th of February. Cases were counted by thousands and deaths by hundreds. In the town of Buenos Ayres, containing 795,000 inhabitants, 121 deaths

were caused by insolation during that period. People "dropped dead in the streets as if struck by lightning." The microbial theory is hardly competent to explain experiences of this sort.

THE ARMY MEDICAL DEPARTMENT REPORT

The departmental report for 1900 has just been issued. It is a portly volume, containing a large amount of interesting material. The medical history of the recent war is to be compiled and published separately. The statistics of troops serving in South Africa have, therefore, been excluded. The admission rate of the year was 827.7 against 982.3 in the preceding decennium, the death-rate 9.05 against 8.89, and the invaliding rate 24.93 against 15.52. The constant sick rate was 46.08 against 59.15. These figures indicate less sickness, but a somewhat higher mortality and considerably greater loss by permanent invaliding. The statistics of the several commands indicate considerable variations, but, on the whole, are favourable with the exception of India, where the troops suffered from the conditions affecting all communities in an exceptionally unhealthy and deadly year. It is interesting to note that there was a decrease of prevalence and mortality of enteric fever. This is attributed, and no doubt rightly, to the cessation of the usual reliefs, and the consequently diminished number of susceptible individuals arriving in the country. From almost all the commands a decrease of several diseases is reported. In the absence of special preventive measures this fact would point to a higher moral tone in the army and perhaps to the influence of agents and agencies warning and guiding the soldier as to the risks of vice and the advantages of temperance and continence.

K. McL.

17th July 1902

Current Topics.

THE TRYPANOSOME IN THE BLOOD OF MAN

OUR readers will remember numerous allusions in the medical journals to the discovery by Dr J. Everett Dutton of a trypanosome in the blood of an Englishman in Gambia. The case is very fully and clearly detailed in the recently issued report of the Thompson-Yates laboratories of Liverpool (Vol. IV, part 2, p. 455), and as it is the first of the kind it is worth briefly giving in these columns.

The patient, an Englishman, 42 years of age, was Captain of a river steamer in Gambia, and had been about six years in that country. Up till May 1901, he had had good health, but in that month his health broke down, and he was in hospital at Bathurst for three weeks with low irregular fever till he was invalided home to Liverpool, when in that city he was fourteen days in hospital, having three short periods of low fever, with hurried tongue, constipation, slight enlargement of the liver and enlargement and considerable pain over the spleen, the pulse being usually 90 per minute. While in hospital in Liverpool Dr. J. E. Dutton examined the blood, but found nothing. The patient improved, went on leave for a change, and then out to Bathurst again, on the way being attacked with a sort of pneumonia, in which the sputum was not rusty but "more of the nature of pure blood". On arrival at Bathurst, he was weak and emaciated, and on 15th December at 5 P. M., Dr. J. E. Dutton made three coverslip fresh preparations of the patient's blood. Examination with a Zeiss A lens revealed nothing but with a higher power (Zeiss D) Dr. Dutton discovered three trypanosomes in the three slides.

At this time the patient was weak and emaciated, face puffy, eyes sunken, lower eyelids cedematous, no cough, no expectoration, respirations always over 20 per minute, but never laboured, pulse frequent, 96, regular in time and force, cardiac sounds normal, no diarrhoea, fair appetite, liver dulness, $4\frac{1}{2}$ inches in nipple line, extended just below edge of ribs, spleen dulness increased, measured diagonally 7 inches, edge could be felt below ribs, now no tenderness on palpation, no other symptoms present, urine healthy. The temperature charts show "an irregular but distinctly relapsing type of fever", viz., periods of three or four days slight pyrexia followed by four or five days in which the temperature was below normal. From 16th to 18th December the patient's temperature was raised, and on these days parasites were found in the blood, the greatest number seen being 15 under a $\frac{3}{4}$ inch cover-glass. When the temperature fell on 19th December no parasites could be seen. We may add that malarial parasites were never found. The clinical features of this interesting case are thus summed up by Dr. Dutton—

- (1) General wasting and weakness, especially in legs
- (2) Irregular relapsing fever, temperature never high, lasting one to four days, with, at times, morning remissions, a pyrexial period of two to five days, when the temperature remained normal or subnormal
- (3) Edema, more especially about the eyes
- (4) Injection of the skin, and sometimes conjunctivæ
- (5) Enlargement and tenderness of the spleen
- (6) Constant frequent pulse and hurried breathing, associated with no definite organic lesion.

The above description is worth recording. It will be agreed that there is nothing absolutely characteristic about this group of symptoms, and no doubt cases not very dissimilar will be remembered in the experience of many of our readers. It is scarcely likely therefore that trypanosome disease in man will be discovered by clinical symptoms alone, but such a combination of symptoms should put us on our guard, and lead us to make frequent examinations with an high power microscope on any case, where the symptoms point to a "chronic malaria"-like attack, but in which, as is not unusual, the parasites of malaria are absent. Other trypanosomes are common in India in rats, cattle, and equines, so that it is not impossible that the disease may yet be found in India. The only previous record of a trypanosome occurring as a human parasite is that of Nepveu, but he afterwards contradicts himself, so that it is quite doubtful what he did see.

The exact species of this human trypanosome is not yet identified, Laveran who examined some of Dr. Dutton's slides inclines to believe it a new species. Dr. Dutton proposes the name *T. gambiense*, but why not *T. humanum*, or *T. hominis*? Since the report was written Dr. Dutton has discovered trypanosomes in one preparation of blood taken from a child three years old.

The subject is a new and interesting one, and we hope that microscopists in India will early turn their attention to the possibility of the existence of this parasite in human blood in India.

PROPOSED JOURNAL FOR THE R A M C

In our editorial last month we commented upon the fact that almost alone of European nations the Medical Department of the British Army had no representative Journal. It so happened, however, that at the very time our words were being printed, the Director-General, A. M. S., at the War Office was issuing a circular on this very subject. This circular contains the following—

"It is believed that the establishment of a journal devoted to matters of professional and scientific interest could be generally welcomed by Officers of the Army Medical Services, as affording to them advantages similar to those already enjoyed by other branches of the British Army, and by the medical services of Continental powers.

"The proposed journal would be a great extent to take the place of the present appendices of the Army Medical Department Report, and would embrace the following items—

- (1) Original articles written by Officers belonging to the Army Medical Services and others
- (2) Bibliographical notes on articles of importance and interest to the military services
- (3) Reprints and translations from military medical and other journals
- (4) Official gazettes, and official information generally, bearing upon the Army Medical Services

The journal, it is proposed, will be conducted and edited under the supervision of a committee,

representative of the Head-quarters Staff, the Medical Staff College, and the Advisory Board, and to this Committee Officers, who have made special studies of any subject, are requested to give their names as referees on that particular subject. It is also stated that the pages of the proposed journal will "not be open to controversial correspondence, or to items of social or personal interest other than what is official." The annual subscription will be about £1.

We thoroughly approve of the announcement of the new journal. It has long been a matter of wonder to us, that the Army Medical Department had no journal to represent its interests. There can be no doubt of the success of the journal if medical officers of the corps will subscribe, and if a good editorial staff is chosen and if the journal is *not too severely official*. It is evidently modelled on the lines of the journal of the American Army Surgeons.

We look forward with interest to its publication, and offer it a hearty welcome.

EPIDEMIC CEREBRO SPINAL FEVER

DR J RUTTER WILLIAMSON has published a pamphlet entitled "a Clinical Study of Epidemic Cerebro-spinal Meningitis," which is well deserving of study. We have no hesitation in saying that this pamphlet contains the most complete review of this fatal disease which has hitherto been published. In most of the published accounts of this disease in text books (except Osler's), the description of the disease is taken from Hirsch, and in spite of all that has been written on the disease in India, its existence in tropical climates is ignored. There is, we think,—and the pages of this Gazette within the past few years are a proof,—no doubt that cerebro-spinal fever is a much commoner disease in India than is generally imagined. The disease has hitherto been studied chiefly in jails and barracks, but there is an increasing body of evidence to show that it must be reckoned as one of the continued fevers of India, and that it exists among the general population.

The present pamphlet discusses the disease under the following headings: nomenclature, etiology, latitude and temperature, soil and locality, sex, age, time of day, social conditions, food, trauma, contagion, specific cause, path and method of invasion, pathology, morphology and symptomatology. All these points are adequately discussed with a full knowledge of the oldest as well as the most recent literature of the subject. In fact, we know of no such complete clinical description of the disease. We note that Dr Williamson agrees with us in finding the disease most common in the hot weather months, and he remarks as follows on the dust theory (which is also supported strongly by the paper

published in this issue by Captain E R Newman, I M S) —After mentioning the theory put forward as regards the continued series of cases in the Bhagalpur Jail, Dr Williamson writes, "my own cases occurred before these observations had been recorded, but though I was not looking for proof of it, I found that the epidemic occurred during the driest season when dust storms were frequent, as there had been no proper rains for two years in the district. New cases ceased to occur immediately after the rains had come, this sudden disappearance of what had been a formidable epidemic excited comment at the time."

We need not quote this valuable pamphlet any further. We advise our readers to get it for themselves. The disease is becoming increasingly recognised in India, and it behoves everyone to be on their guard and on the look out for it.

We are very glad to be able to announce that Captain C J Robertson-Milne, M B, I M S, has been placed on special duty to investigate this disease.

PRICKLY HEAT AS AN INFECTIVE DISEASE

ALL of us who have lived in the tropics are only too well acquainted with prickly-heat, and most of us have, in a more or less vague way, connected it with excessive perspiration and the irritation of certain articles of clothing, but a novel view of its etiology is given in a short article by Dr H E Durham appended to his Report of the Yellow Fever Expedition to Pará (Brazil) sent out by the Liverpool School of Tropical Medicine. He claims to have clearly traced its infective nature on his own person. From what seemed to be a mosquito-bite, which persisted, a few days later an irritating patch of redness appeared, with small vesicles about the middle of the forearm. Dr Durham found that the sites corresponded with the points of contact of his wrist and forearm with the edge of the table when using the microscope, and "it appeared clear," he writes, "that the patch on the forearm was due to implantation of the causative material from the wrist to the table and so to the forearm. Later observation showed that direct infection by local contact could occur as from a spot on one side of the bend of the elbow or fold of the axilla to a corresponding contact point on the other side. It also seemed probable that a certain amount of spreading might be due to rubbing or scratching without antiseptic precautions. To cut matters short before the condition was properly dealt with, it had spread more or less universally."

Dr Durham mentions the possibility of the original inoculation being due to the bite of a mosquito, but this, he says, "was by no means proved," and it is just as well, as the common house mosquito of Pará is the *stegomyia*

fasciata, the well-reputed carrier of the yellow fever poison.

With the aid of some squeezing and a very fine capillary tube Dr Durham removed and examined the contents of the vesicles. When the vesicle is not too far advanced the fluid is clear, and is generally found a few red blood corpuscles, but no leucocytes, at a later stage the leucocytes are in greater number and give the purulent character. At the early stage what attracts attention is "the number of small bodies endowed with active amœboid movement. Then protoplasm is more refractile than that of the polynuclear leucocyte and contains a small number of granules of a highly refringent character. The changes in shape of these amœboid bodies are rapid at ordinary temperatures (27°—30° C), the pseudopodia being generally blunt and rounded."

"When suppurative change has commenced large numbers of polynuclear leucocytes are to be seen, either entire or more or less disintegrated, micrococci in pairs or in groups are present in variable numbers. Active amœbæ are then rarely found, but there are some globular bodies which would correspond in size to and which are possibly of the nature of encysted amœbæ. The abundance of the amœboid bodies at the earlier stages, and the absence of micrococci or other bacteria at this time make it probable that the formation of the lesion is concerned with the presence of the amœbæ, the later invasion and suppuration, when it occurs, being caused by micrococci and other bacteria."

Dr Durham notes that "adult natives do not appear to be troubled, but small babies are often been covered with what appears to be an identical condition." At the same time Dr Durham says "individual immunity is not always acquired by long residence," a statement that our readers will certainly agree with. As to treatment Dr Durham tried many "protoplasmic poisons," but found only iodine and corrosive sublimate to be of service. Few of us will care to cover our bodies with diluted tincture of iodine, though it might well be tried on the first patch to appear. A solution of perchloride of mercury 1 in 500 or 1 in 1000 in spirit and water or in water alone may be rubbed in with cotton-wool, or a mercurial soap may be applied.

We have quoted the above, but do not think that it covers the whole etiology of this troublesome complaint. Infection by contact will scarcely explain the prickly-heat of the space between the scapulae or in the lumbar region.

THE HARVEY MEMORIAL FUND

THIS fund now amounts to about 2,600 rupees, and at a meeting of subscribers in and around Calcutta it was decided to put forward the following definite proposals.—That an oil painting of the late Surgeon-General R. Harvey would be a suitable way of perpetuating his

memory, and that Surgeon-General L. D. Spencer, I.M.S. (retired) (a brother-in-law of the deceased) be asked to arrange with a London artist to paint the portrait from existing photographs. If, as is probable, there will be enough money for two portraits (it may be of different sizes), one of these should be presented to the Eden Hospital, Calcutta, where Surgeon-General Harvey worked for many years as Professor of Midwifery and Gynaecology, and that another portrait in oils be offered to the United Service Club at Simla.

The opinion of subscribers in other parts of India is invited on these proposals.

THE re-organisation of the professorial staff of the Madras Medical College entailed an addition to the strength of the medical officers in charge of patients and necessitated a re-distribution of the beds of the hospital. This change came into force on the 2nd August 1901, and the following table puts on record the distribution of the beds under the new scheme—

Designation of medical officers	Number of beds	
	Medical	Surgical
First Physician (Professor of Medicine)	67	
Second Physician (Professor of Physiology)	54	
Third Physician (Professor of Materia Medica)	54	
Fourth Physician (Professor of Pathology)	37	
First Surgeon (Professor of Surgery)		80
Second Surgeon (Professor of Anatomy)		72
Third Surgeon (Professor of Biology)		86
		458
Special rooms for paying patients—		
European males		8
European women and children		3
Native males		6
Contagious block		25
Cells		2
Total		500

THE appearance of a new publication entitled *Indian Education* is certainly *felix opportunitate*, in that at present the question of education in India is very much to the front. The new journal is edited by Mr. Nelson Fraser of the Deccan College, Poona, and published by Longmans, Green & Co.

If we are to judge of the future by the excellence of the first number, the journal should have a prosperous career before it. We hope that it will devote attention also to scientific education.

IN an interesting communication, written in French, in the recent Thompson-Yates' Laboratories Report (p. 472) Dr. Paul Van Durme of Ghent, gives an account of some notes on the embryos of the strongyloides (*vel anguillula*) intestinalis and their penetration by the skin. He refers to Dr. Looss' experiments with the ankylostoma and to those of Dr. C. A. Bentley (*I.M.G.*, February 1902, p. 78, and *B.M.J.*, 25th January 1902), and in confirmation of the views of the Assam observer he finds that the embryos of the strongyloides cause a sort of vesication or

pustulation very similar to the *pani ghao* or cooly's ground-itch of Assam. All interested in the subject should study Dr Van Durme's article. We have already suggested a similar mode of entrance for the embryos of the guinea-worm, and we would like to see some one working at this point who lives in guinea-worm-infected districts.

WE congratulate Dr P J Freyer (I M S, *etd*) on the continued success of his operation for total extirpation of the prostate (*B M J*, 26th July 1902).

WE note that epidemic dropsy, the reappearance of which in Calcutta we have recorded (*I M G*, August 1901 and July 1902), also made its appearance last year in Madras. In the Madras Hospital Report the occurrence is recorded. This is the first time that this disease is known to have been seen in Madras. Eighteen cases are said to have occurred, but the mode of its introduction into Madras is quite unknown.

MR JONATHAN HUTCHESON in the July *Poly-clinic* discusses at length the question of a connection between arsenic and cancer. The suggestion at present is that arsenic, whether taken medicinally or dietetically, as in beer, or inhaled as dust or vapour, or externally applied to the skin, has "the effect to predisposing the tissues to cancerous modes of growth."

If so, cancer should be a very common complaint among the "arsenic eaters" of Styria, but is it?

AN interesting paper (which will be further noticed in our next issue) by Major A R. Aldridge, R.A.M.C., on "Enteric fever and sewage disposal in tropical countries" appears in the current issue of the *Journal of Hygiene* (Vol 2, No 3).

WE are very glad to hear that a Medical Society has been started at Port Blair in the Andamans. There are about 15 medical men in the settlement—two I M S officers, three Military Assistant Surgeons, three Civil Assistant Surgeons (Calcutta M B's), and seven Hospital Assistants. The amount of material is large. With a daily average strength of over 12,000 convicts the sick list is naturally large, and the opportunity for pathological observations is unique as all fatal cases are examined post-mortem.

We wish the new Society every success, and congratulate its President, Captain E E Waters, I M S, the Senior Medical Officer, and Assistant Surgeon D Sanyal, the Secretary, on its inception. We hope to be able to chronicle its transactions in our columns from time to time.

The remarkable paper which we publish in this issue by Dr C A Bentley is one which will probably give rise to much controversy. For the past dozen years the question of the exact nature of the fell disease known as *kala-azar* has been much discussed in these columns, and opinion has been divided as to the relative shares taken by the ankylostoma parasite and by malaria in its causation. The more recent reports of Leonard Rogers and R. Ross inclined medical opinion to the malarial nature of the disease, and the working out of the communicable nature of malaria by means of anopheles seemed to support and explain the undoubted fact of its infectivity. Now Dr Bentley tells us that the disease is nothing else than Malta or "undulant" fever, a disease which our columns in the last few years has chronicled the increased recognition of in India. The great difference in the death-rate is one of the first objections to the new theory, the Malta fever death-rate in Malta is only two per cent, while *kala-azar* has proved a deadly and decimating disease in Assam. We reserve any further expression of our opinion at present, but invite the views of medical officers acquainted with both diseases. Much will depend upon the view taken of the value of the serum test in Malta fever, about which we have heard many contradictory opinions, and personally we would like more clinical evidence. If Dr Bentley's observations are confirmed, they may also throw light on the nature of those puzzling cases of so called chronic malaria without parasites.

In a recent issue of the *Journal of Tropical Medicine* (June 16th, 1902, p 183), there is published a letter from Dr P H. Delamere to Dr P Manson on a "peculiar marking of the tongue in ankylostomiasis," which, we venture to think, is wrongly so described. Dr Delamere had many cases of "ankylostomiasis" under treatment in the Estate Hospital at Leguan, British Guiana, and soon noticed that all the patients under treatment for this complaint "had a peculiar mark on the tongue exactly as if the patient had just wiped a penful of Stephen's blue-black ink on his tongue," an appearance which is well illustrated in the article quoted. It was soon found that these coolies came all from India and that all having such tongue marks also harboured the ankylostomes. Dr Delamere therefore regards it as an "early sign of pronounced anæmia."

From the description we incline to believe that these marks are only what has been for years recognised in India as melanoglossia (see F P Maynard's description of it as found in Chota Nagpore coolies in *I M G*, October 1897), and that the condition has no pathological significance whatever, in fact, it is "racial not pathological," to use Manson's words (*Tropical Diseases*, 2nd Ed, p. 106). Considering that (as Lieute-

nant-Colonel E. Dobson, I.M.S., has shown, see Manson, p. 582), 75 per cent of Indian coolies harbour the ankylostoma, it is not surprising that all the Indian coolies noted by Dr. Delamere also were found to be infected with this everywhere-present parasite.

NOTES FROM CONTINENTAL EYE CLINICS.

II—VIENNA

VISITED Professor Fuchs' Klinik, and attended his lecture on the pathology of the eye, he lectures once a week on pathology throughout the year, the lectures consist of lantern demonstrations of microscopic specimens, each of which is shown in turn under high and low power, every detail of the specimens can be clearly seen, and it is almost needless to say that they are singularly beautiful samples of their kind.

The buildings of the klinik are old and leave much to be desired, but the fullest use is made of them, and the teaching of students is carried to a fine art.

There is a valuable collection of wax models of rare cases which have passed through the klinik at one time or another, these are executed by a highly skilled local artist attached to the school.

Of the many interesting cases shown me, one stood out pre-eminent as being Professor Fuchs' first operation of the kind, he had transplanted a flap of skin and cartilage from the back of the ear to replace the conjunctiva and cartilage of the lower lid, this procedure was combined with a plastic operation of the usual type, and the result was excellent.

Professor Fuchs speaks English fluently, as do so many educated Austrians, and he is most courteous and friendly to Englishmen.

I also attended one of Professor Fuchs' ordinary lectures, of which he gives four a week, a subject is taken and cases are brought in to illustrate it, the notes of each case are read by an assistant, after which the Professor points out the leading features of interest to the assistant, who next takes the case round the room and demonstrates it to each student in turn, whilst the cases are thus circulating, the Professor discusses the pathology, treatment, etc., of the disease, eliciting leading points from the patients by questions. Very few students were taking any notes at all, and Dr. Fuchs speaks too fast to allow 'slavish detail' in note-taking, the lectures are essentially conversational, and aim at supplying clinical instruction rather than at providing a substitute for text-books, the lecture lasted for 1½ hours, and was listened to with marked attention throughout.

Cataract—I was fortunate enough to see Professor Fuchs perform a number of operations, he sterilises the eye with perchloride of mercury solution 1/5000, uses an incision in the limbus, with a conjunctival flap, performs iridectomy in the great majority of cases, removes a large

piece of the capsule with capsule forceps, and expresses the lens by digital pressure applied through the lower lid, he uses no speculum, an assistant holding the lid, any remaining cortex is removed, as far as possible, by means of a curette.

Professor Fuchs reserves the simple operation for cases in which, with perfect health of the patient, the ocular tension is not above normal, but he freely admits that it is *never* possible to ensure the avoidance of prolapse, and that *even now* he meets with three per cent of this formidable complication amongst his selected simple extractions, he treats prolapse with prompt and free iridectomy. He always does iridectomy at the time of operation in his private cases, on account of the difficulty and fuss private patients make over a second operative procedure. In conditions such as we meet with in India, where it is impossible to *strictly immobilise* the majority of our patients (*i.e.*, the natives), and where the European balance is usually old and climate-stricken, he said that he would not hesitate to adopt the combined operation as a routine procedure.

In the young he prefers the simple procedure for its cosmetic results, when glasses are worn he considers the visual results as good after extraction with iridectomy as after the simple operation, he finds the mobility of the pupil impaired, but not lost after such iridectomies.

A large number of metal fragments are removed annually from the globe (more than one a week), Haab's magnet is used, but in the final stage of extraction from the anterior chamber, a small magnet or a pair of forceps is substituted for the large magnet, this is done to avoid moving the patient from the table, but it appears to be a less speedy method than Haab's own, Haab however keeps his magnet in his operating room.

Extirpation of the lachrymal sac is freely performed here. Fuchs considers this procedure indicated (1) when there is suppuration, (2) when the stricture is tight and of long-standing, and (3) when the patient's time is limited, indeed he considers that only early and comparatively mild cases do well under probing, and probably most surgeons who have seen much of these cases will endorse this gloomy view of the case. Extirpation of the sac is performed as a routine measure preliminary to serious operations on the globe.

I had the opportunity of seeing Fuchs perform a new operation recently suggested to him by one of his assistants, the iris was adherent to a dense circumscribed corneal opacity, and the tension of the eye was raised thereby, a circular portion of the affected cornea was cut out with a clock-work trephine, and turned back, the iris was next freely excised through the opening after it had been detached from the raised lid of cornea, finally this lid was put back into

place and the eye closed. It appeared to me to be a procedure for which a field exists in India, where corneal complications are so common.

VISITED Professor Schnabl's klinik. Professors Schnabl and Fuchs have klinik in the same block of buildings (Das Allgemeine Krankenhaus, or General Hospital), but are in every way independent of each other.

Schnabl lectures five days a week, for $1\frac{1}{2}$ hours each day, he avoids all systematic lecturing, and makes each lecture a practical one on the clinical material available at the time. Students are brought down and taught to elicit histories, to recognise signs and symptoms and to apply the principles of treatment to the particular case before them. This system is, in fact, the apotheosis of practical clinical teaching, and it is worthy of note that the majority of the students prefer Professor Fuchs' method of combining systematic with clinical teaching.

Every fifth-year student in Vienna must take a term of ophthalmological work, he may select his own teacher and his own examiner, the latter choice being limited by the regulation of the university which demands that each of the two professors must divide the candidates evenly between them.

CATARACT—Schnabl has the conjunctival sac gently cleansed with wool sponges soaked in sterile solution of Sod Bicarb (1%), he uses 2% Cocain solution, and, like many of the Germans I have seen, he operates from in front, using either hand with equal facility, he performs iridectomy as a routine measure, and, if possible, he prefers to operate on both eyes at one sitting. From time to time Schnabl has been tempted to take up the simple operation, for which he has a hankering, but after a few prolapses he always returns to the combined method, which he is now using.

GLAUCOMA—Schnabl's favourite operation is iridectomy, which, I understand, he performs early, he has tried anterior sclerotomy, but was dissatisfied with it, he does not, however, appear to have tried repeating the operation at short intervals, according to Haab's method, he never uses posterior sclerotomy.

SUBCONJUNCTIVAL injections are much in vogue in this klinik, and are said to be attended with most excellent results, they are considered to be indicated more especially in (1) recent cases of detachment of the retina, (2) in chronic cases of mudo-cyclitis, and (3) in similar cases of interstitial keratitis.

About $\frac{1}{2}$ cc is injected at one time, and the fluid is hastened into circulation by massage through the closed lids, the frequency of the injections is determined by the amount of reaction—thrice weekly appearing to be a common figure.

Schnabl's lecture-room is adorned with paintings and large photographs of famous ophthalmologists, the collection not only embracing Viennese of note, but also many foreigners, amongst whom one noticed Bowman and other British surgeons.

An added feature of interest is that this is claimed to be the first klinik in the world, in which ophthalmology was taught as a distinct branch of medicine and surgery.

There is a very excellent collection of models, pathological specimens, &c, at the disposal of the students, not to mention that every facility is supplied for practice with the ophthalmoscope, perimeter and other instruments of diagnosis.

I HAD the good fortune to meet Dr. Elsching, the author of the Stereoscopic Atlas which bears his name, he very kindly demonstrated to me the Stereoscopic Camera, which he has invented for the purpose of taking pathological stereoscopic pictures, he also showed me a number of his results, which are so life-like as almost to excel in clearness the usual museum specimens as seen through a bottle.

The atlas and stereoscopic apparatus can be obtained for a very moderate figure, by writing to Herr Braumüller, Publisher and Bookseller, Vienna, and asking for Dr. Elsching's Stereoscopic Atlas.

R. H. ELLIOT, F.R.C.S., CAPT., I.M.S.

Reviews

Nothangel's Encyclopedia, Typhoid and Typhus Fevers.—By H. CURSCHMANN of Leipzig. Edited by WILLIAM OSLER. Philadelphia and London: W. B. SAUNDERS & Co., 1902.

It is well nigh impossible, within the limits of a single review, to adequately notice this magnificent monograph on typhoid and typhus fevers. This volume is more than a mere translation of Professor Curschmann's celebrated work. The Editor has added to and enriched it by the ripe experience he has gained of typhoid at the well-known hospital of the Johns Hopkins University. The work therefore represents not only the best German teaching of the day, but has incorporated into it all the special work on typhoid done by the staff of the Johns Hopkins Research University.

We can only, in this notice, call the attention of our readers to a few of what may be called the controversial points in typhoid fever.

It is pointed out that typhoid is essentially a city or town disease, and thus presents marked differences from the "true pestilences," *e.g.*, small-pox, typhus, cholera, and plague. These diseases are generally confined, in a more or less smouldering condition, to certain areas, and from

time to time they flare up and spread over wide areas Typhoid, on the contrary, is of world-wide distribution, and being dependent on the individual and the activity of human intercourse "it almost never disappears in populous cities, while in the country, it is generally absent or occurs but occasionally." Typhoid always maintains its tendency to local limitation. Curschmann and his editor are strongly of the opinion that the digestive tract is practically the only portal of entry for the germ of the disease, that is to say the infective agents must be swallowed "Of all carriers of the virus, *water* is by far the most important, but the forms in which water may serve as the means of conveying the germ to human beings are in detail so extremely variable that even in this large monograph they cannot all be mentioned. The author admits that the dissemination of the contagium through the air "is possible," either in a moist condition or by particles of dust. But though he makes this admission, and says that many of the instances reported by early investigators "are susceptible of scarcely any other interpretation," yet most clearly Curschmann cannot be quoted in support of the air-borne theory of conviction, in fact his own teaching is dead against such a view.

In this connection we may point out that for readers in India this great book is rendered somewhat less valuable, in that it nowhere recognises or records the points of view or opinions of those who have in India often pointed out instances of outbreaks which are scarcely susceptible of explanation by the exclusive water theory. Our author attributes little or no significance to the earth as a factor in the etiology of the disease, but admits that "the typhoid poison may remain attached in an active state for a considerable length of time to clothing, linen, bedding and various household articles." We regret we have no space at present to touch upon the thousand other points of interest in this splendid work. It is certainly supreme in the English language as a work dealing with typhoid and typhus, and we can strongly recommend it to our readers as a mine and storehouse of information on all points connected with the etiology, clinical history or pathology of typhoid. As a book of reference it must for long remain unique and unsurpassed.

Practical Surgery for the General Practitioner—By NICHOLAS SENN, M.D., Ph.D., LL.D., Professor of Surgery, Rush Medical College, Surgeon General of Illinois. With 650 Illustrations, many in Colours. London & Philadelphia: W. B. SAUNDERS & Co. Pp 1105.

This eminently practical treatise on surgery, bearing the well-known name of Senn, will add to the already high opinion entertained among the surgeons of great and greater Britain of American surgery. Unlike ordinary text-books, it is not

addressed to the student, and, unlike many monographs in medical journals, it does not appeal solely to specialists in some particular branch. It is especially valuable to those to whom it is dedicated—general practitioners. As such, we cordially recommend it as a valuable addition to the necessarily somewhat restricted literary armamentum of the Indian surgeon, who has often to be that best of general practitioners—an all-round specialist. As might be expected of the author, great attention is paid to the subject of intestinal surgery, and the sections on military surgery are especially interesting, as giving the results of the author's experience during the Græco-Turkish and Spanish-American wars. An ultra-critical reader might object to the insertion of accounts of experiments on animals in a work expressly designed for emergency surgery, on the other hand, these accounts are only inserted in relation to such surgery, *e.g.*, in chapter 23 on enteric haphy, an operation which a general practitioner in the country in America, India, and even England might be called upon to undertake for the relief of intestinal obstruction. The illustrations of this part of the subject are particularly luminous.

Much is said in favour of conservative surgery, which could only be said with force by a surgeon of Senn's operative experience (a similar tendency is noticeable in Kelly's operative gynaecology) especially is this the case in the section on Gunshot Wounds. Senn holds that primary resection of a recent gunshot wound of any of the larger joints has become an unjustifiable surgical procedure, and that the indications for primary amputation of a limb for gunshot fracture should at present be restricted to cases in which the nutrition is suspended or seriously threatened by lesions in the soft parts. "In cases of doubt the soldier is entitled to the benefit of the same and the conservative treatment should be carried to its utmost legitimate limits." Probing of bullet wounds is discouraged, and the first aid dressing largely relied on. A determined protest is made against the unnecessary removal of detached and partially detached fragments of bone. The writer is a strong advocate of plaster of Paris splints, considering it is the splint of the future as regards compound fractures.

Considerable use is made of radiographs to illustrate the letterpress. Two especially interesting ones are given of Colles' fracture, together with some novel observations on the pathology and treatment of that injury.

The chapter on antiseptics is very full, and of course thoroughly up to date. The writer is not above the minute details which tend to make successful antiseptics. He objects to nurses taking part in operations while wearing a wedding ring. In this country the surgeon who should enforce the removal of all ornaments off

wrists and fingers on the part of his female assistants would be a bold man, though in some places such boldness has won the day! Senn rightly points out, however, that the hands of the *surgeon* are to be dreaded most, as he is continually handling suppurative affections. In too many cases mere avoidance of puerperal septicæmic cases, and of *post-mortem* is deemed sufficient. Alcohol for hand disinfection is recommended, but the conclusion of the whole matter is that "reliable hand-disinfection does not depend so much on the kind of antiseptic used as on the pedantic manner in which the attempt is made." "*Duty hands have destroyed more lives than all the implements of warfare*" This sentence might appear as a motto round the walls of operating theatre lavatories. Turpentine is recommended to prepare the patient's skin for the antiseptic solution. Sea sponges are only allowed if kept a week in strong antiseptics between two operations. 40 per cent formalin is used for this purpose. The formalin must be well washed out with warm salt solution before the sponges are used again. Bernay's sponges of discs of compressed cotton absorb twelve times their weight of fluid. All known antiseptics are exhaustively treated, and no practical detail is despised, *eg*, the component parts of Thierich's solution are given—salicylic acid 2 parts, boric acid 12 parts, water 1000 parts. Again, directions for a 10% solution of aluminium acetate are given, "by mixing 24 grains of alum and 38 grains of acetate of lead in one quart of sterile water." This solution is recommended as absolutely safe and most effective for permanent irrigation of suppurating wounds. Pulverised camphor is advised for gangrenous ulcers. Useful remarks on the contra-indications for carbolic acid, iodoform, and corrosive sublimate are made, and such newer antiseptics as formalin, hydrogen peroxide, and resorcin are fully treated. A few drops of a concentrated alcoholic solution of salol in a glassful of water is an admirable disinfectant for the mouth before operation. Some good prescriptions are given for antiseptic ointments and powders, of which we add a few—

Borosalicylic powder (especially for recent gunshot wounds)—

Boric acid	4 drams
Salicylic acid	1 dram

Antiseptic pomade (French)—

Antipyrin	5 parts
Boric acid	5 "
Iodoform	1 part
Vaseline	50 parts

Borosalicylic ointment (as a protection for granulating wounds and as a dressing after harelip operations and small wounds of the face)—

Boric acid	—	$\frac{1}{2}$ dram
Salicylic acid	—	10 grains
Glycerine ointment	—	1 ounce

The Causes of Death among the assured in the Scottish Widows' Fund and Life Assurance Society.—By CLAUD MUIRHEAD, M.D., F.R.C.P.E. Edinburgh R & R CLARK 1892

This well-known Society, founded in 1815, has been fortunate in having had three such able physicians in succession for its Principal Medical Officer as the late Dr Warburton Begbie, the late Dr William Robertson and Dr Claud Muirhead. It has been the custom to draw up septennial mortality reports, and the last of these by Dr Warburton Begbie covered the period from 1867 to 1873 inclusive. The author has now, in this book, brought forward these Reports through three more septennia, *viz*, 1874—1880, 1881—1887, and 1888—1894. During this period of 21 years there were 9,791 deaths, an aggregate which affords fair data for comparing the increase or decrease of mortality in different diseases, for showing any alteration in their incidence at different age-periods, and for noting improved accuracy in diagnosis as to the precise cause of death in the later returns. Dr Muirhead has analysed only the deaths of males which amounted to 9,163, while the 628 female deaths have been set aside for future discussion. Of the male deaths 4,689 were English, 2,976 Scots, and 1,498 Irish.

For the sake of continuity he has adhered to the original classification, which is somewhat quaint. For instance, the group of zymotic and contagious diseases is made to include ague, cholera, diarrhoea, diphtheria, dysentery, enteric fever, erysipelas, glanders, whooping cough, influenza, measles, phlebitis, pyæmia, remittent fever, rheumatic fever, scarlatina, septicæmia, small-pox, syphilis, typhus fever and yellow fever. Another whimsical group is that of diseases of uncertain seat, which include abscess, Addison's disease, atrophy, cancer, debility, dropsy, gout, mortification, pernicious anæmia, purpura, and tumour.

Dr Muirhead has a very interesting section on the subject of cancer, which is replete with statistics to prove his thesis. He believes that there has been a very real progressive increase in cancer as a cause of death, and that the age-period at which cancer proves most fatal is becoming younger. His practical conclusions, from an insurance point of view, are that—"If a proposer, whose family history is tainted as indicated, desires a policy on the Endowment Assurance scale, maturing at the age of 45 or 50, I consider that this family history of cancer may be entirely ignored. But if the policy asked for be an Endowment Assurance maturing at an older age, or a Whole Life Assurance, it is a question whether such a proposal should be accepted at ordinary rates. The mortality from cancer rapidly appreciates after age 50, and, after careful consideration, I am of opinion that probably the best way of treating such a proposal would be to accept it on the Endowment Assurance scale at age 55 on death."

The chapter on Diseases of the Nervous System elicits the commendation that medical men now take greater care to individualise the particular form of disease of the nervous system which proves fatal. This is, of course, merely an index of fuller knowledge and better teaching in recent years.

His observations tend to confirm the old statement that the relative number of deaths in Scotland from brain disorders is greater than in other parts of the United Kingdom, also that this liability cannot be attributed to an alleged greater amount of intemperance.

In recognition of its crucial importance Dr Munhead's longest and most interesting chapter treats of phthisis. As he says, this disease has ever proved a dominant factor in building up the mortality table. His figures impress the reader forcibly with the satisfactory fact that both in the general population and amongst persons insured there has been a considerable decrease in the mortality from consumption, and that this amelioration has been going on steadily during the last forty years. Moreover, there has been a marked advance in the average age at death. His insurance statistics tend to disprove the popular belief that phthisis is the disease of adolescence and early maturity, rather has it proved a potent cause of death amongst the older members.

Useful hints are given for the benefit of examining medical officers to assist them in detecting doubtful or incipient cases of the disease. These involve attention to the early cough, dyspepsia, pulse-rate, temperature, height and weight. Although the author fully recognises that tuberculosis is the result of infection, yet he points out most appositely that this does not state the whole case. Hereditary predisposition must be reckoned with, and cannot be ignored. The two theories are not incompatible, in fact they are complementary and necessary to each other. In the past, however, too much stress has been laid on the family history, and the age of the members affected with reference to the age of the candidate has not been duly considered. Out of 524 deaths from phthisis in the Society Dr Munhead found that certainly not more than 35% exhibited any family predisposition, and this percentage corresponds closely with the 34% of Dr Williams and with the 36% of Dr Cotton. His investigations tend to show that a family history of phthisis is just as common amongst non-consumptives, and he formulates the statement that "15% at least of proposers to the Society for assurance, and of those accepted by the Society, will show a record of death by consumption among their parents."

The total mortality from heart-disease figures as the most fatal of all diseases amongst the deaths in the 21 years under report, but this foremost position was not attained until the age

of 55 and upwards, i.e., at the period when decadence of various organs and of the general vitality has supervened. The section on Violent Deaths has a curious interest. Under this heading there were 377 deaths, of which 250 were casualties and 127 suicides. The causes of the casualties were very miscellaneous, varying from "Moonlighters'" outrages to an execution on the scaffold. Tables are given of the varieties of suicide, and of the manner in which persons of the three nationalities select for committing self-destruction. Dr Munhead points out the startling fact that a large number of suicides occurred in the early years of assurance. "These facts raise the unpleasant suspicion that there was floating in the minds of some at least of these men, before they became members of the Society, some thought, however vague, of putting an end to the weary struggle between duty and the desire to have done with what was to them a miserable existence. Next came the feeling that in any case the family ought to be provided for, and a life assurance policy was taken out. After affecting this assurance, possibly all idea of suicide passed away entirely, till some renewed outburst of adverse circumstances overcame the power of moral resistance, and the unfortunate man yielded to the insane impulse. It is difficult to believe that any man would deliberately propose for life assurance with the fixed idea in his mind of putting an end to his existence immediately after acceptance, though the number of suicides during the first year of assurance certainly points to that view of the case."

We heartily commend this book to medical referees, directors, secretaries, and actuaries of life assurance companies, and the general practitioner will also find instructive reading. The numerous tables and statistics, with the acumen displayed in drawing well balanced deductions, do credit to the author's perseverance and judgment, and will enhance a medical reputation which already stands high.

Lectures on the Use of Massage and Early Passive Movements in Recent Fractures.

By SIR WILLIAM H. BENNETT, K.C.V.O., F.R.C.S.
London: LONGMANS, GREEN & Co. 2nd Edition, 1902.

To M. Lucas Championnière is due the credit of reforming the stereotyped treatment of fractures, dislocations and sprains by absolute rest and immobility of the parts. There is no doubt that many surgeons and most general practitioners have carried to excess, and applied in an unintelligent manner, the routine treatment taught in most medical schools and hospitals. Not infrequently the results are positively ghastly,—all of us have seen the shrivelled limbs, the joints

stiff and painful or loose and baggy, and the tedious convalescence ending in a halting result.

Sir W H Bennett has been the pioneer and propagandist of the more rational and more satisfactory treatment by early massage and passive movement, and of the necessity of getting rid of retentive apparatus as soon as is safely practicable. Both patients and surgeons owe him a debt of gratitude for boldly preaching and practising a procedure which abolishes the stiffness, pain and difficulty of movement which are so apt to follow on the discontinuance of splints.

The contents of this book have appeared at different times in the *Lancet* and *Practitioner*. The first edition was produced in October 1900, and the present issue followed fifteen months later. The most important additions to the later impression are the introductory chapter on massage and the lecture on stiff joints. Two lectures, as well as the introduction and the appendix, are devoted to the early use of massage and of early passive movements in recent fractures and in other common injuries. One lecture deals with the rational treatment of stiff joints by manipulation. Perhaps the most instructive lecture is that on the internal derangements of the knee-joint, in which the author gives the results of his experience of over 250 cases specially observed, and in which he throws a fresh light on the operative procedure necessary in selected cases. The book is nicely got up and well illustrated.

ANNUAL REPORTS

THE REPORT OF THE GENERAL HOSPITAL, MADRAS (1901)

As the chief surgical and medical centre in Southern India the records of the year's work in this hospital is always full of interest, and we have for some years past been glad to fully notice the report, which (in contrast with other great Indian hospitals) it wisely prints.

We need not go into the figures of attendance, beyond noting that the attendance rose to over 73,000, the largest number ever treated at the General Hospital, and the record of major operations also shows an increase over that of the previous year.

Turning then to the reports of the Physicians and Surgeons' wards we find MAJOR R. ROBERTSON, I.M.S., was in charge and submits the report of the wards of the First Physician. There were 814 cases treated in these wards, with a death rate of 9.9, or excluding "morbunds" of 7 per cent. The chief diseases were malarial fever, dysentery, *s.c.* fever, typhoid, and tubercle of lungs. A table is given of the typhoid cases 41 in European and Eurasians and 3 in natives, out of the 41 "European" cases only 2 died, a satisfactory result indeed, and one which contrasts markedly with the high death rate of nearly 25 per cent. for British soldiers in the military hospitals in India.

We extract the following paragraph from Major Robertson's report—

"The rose spots in children seem to vary a good deal as to the date of their appearance. This year in about half the cases under 10 the eruption has not appeared until well on in the third week, and then only half a dozen spots have been found. The spleen has invariably been found enlarged in the early stages in all cases, but only in two cases has it been palpated below the costal border. Epistaxis was not found in any of my cases although carefully enquired after. This observation may be open to doubt, as few of the cases I should think, ever use a pocket handkerchief, and so cannot observe traces of blood. Headache of all degrees is found in three children it was so severe as to give rise to suspicion of cerebral meningitis. After a few days the severe types calm down to

the ordinary dull and listless condition and pursue an ordinary course." With reference to the medicinal treatment of enteric fever, I have during the last few years tried many remedies, such as calomel, carbolic acid, chininosol, Angier's petroleum emulsion, castor oil, Apenta water, diaphoretic mixture, with equally good results generally. I am inclined to believe the above class of remedies are of little use as far as influencing the course of the fever is concerned, but they may be useful in some cases in disinfecting or expelling toxins from the alimentary canal, but that is a very small affair when the myriads of bacilli floating free in the blood are considered. As a temperature reducing agent I invariably use the wet pack, which I find suits my class of cases admirably. The coal tar class of antipyretics I have no experience of in this disease."

The report of the Second Physician's ward is written by CAPTAIN F D S FAYRER, I.M.S., who was in charge during the last four months of the year. There was a total of 1,331 patients treated in these wards, the average daily strength being 55.9.

We quote the following—

"Two well marked cases of 'Herpes Zoster,' one in a Eurasian medical student the other in a native ryot. Both cases made good recoveries. A case of tubercular peritonitis was of interest in that the diagnosis was only made after an exploratory opening of the abdominal wall. The case was admitted with a history of diarrhoea, vomiting and pain in the abdominal region. On examination, an indefinite tumour was found in the epigastric region, and I first considered it to be a malignant growth, probably in the stomach. I transferred the case to the surgical wards where an exploratory incision was made into the abdomen with the result that the peritoneum was found to be thickly coated with a deposit of milium tubercles. The case made a rapid recovery after the wound had been closed.

A boy was admitted with a history of pain and swelling in the right hypochondriac region. On examination, a large tumour was found in that region resonant in front but dull in the flank. The urine was tested, but nothing abnormal was found. Beyond slight tenderness on pressure, the patient was in no way inconvenienced by the tumour. A week after admission a large quantity of chylous looking urine was passed, but the tumour did not diminish in size. I however, suspected the case to be one of hydronephrosis and after consultation Colonel Maitland performed a nephrotomy, and a large hydronephrosis of the right kidney was found. A large quantity of chylous looking fluid was evacuated and the wall of the sac ligatured to the abdominal wall. The patient rallied well after the operation, but continued to have the same chylous urine, he eventually died, and at the post-mortem a large hydronephrosis of the left kidney was found. The case was of interest in that the patient up to the time of his admission had not suffered any great inconvenience, beyond on one occasion passing a large quantity of the same chylous urine which he passed when in hospital. The only reason he was sent to hospital being that lately he had slight pain in the right hypochondrium and I take it that at this time both kidneys must have been almost entirely disorganised.

A Eurasian boy was admitted for high fever and presented all the appearances of an advanced case of enteric fever. He was treated as such, but after he had been in hospital a few days, he vomited a round worm which altered the diagnosis. After the exhibition of santonine and castor oil, he rapidly got well. This was interesting from the close similarity of the symptoms to those of enteric.

A large number of cases of cirrhosis of the liver was admitted, of these three were interesting from the fact that from one case, after tapping the abdomen, 528 oz fluid were withdrawn, and from the other two 512 and 492 oz, respectively."

CAPTAIN P C GABBETT, I.M.S., submits the report of the Third Physician's ward. We note that 111 cases of tubercle of the lungs were treated in the general wards, and Captain Gabbett protests against this and points out the impossibility of properly treating such cases in a general ward. He also points to the necessity for a clinical bacteriologist and a laboratory to be attached to this hospital. The following extracts are of interest—

"The blood in a certain number of cases of enteric fever was sent to Dr P S Chundrasekhara Aiyar, who kindly undertook to apply the Vidal test. Useful confirmatory evidence of the diagnosis was thus often obtained early in the disease. The blood was examined in a fairly large number of cases of malarial fever, but owing to my want of experience I hesitate to draw any conclusions from frequent failure to find malarial parasites. In cases in which parasites were found the clinical symptoms had already placed the diagnosis beyond doubt. If the blood in every case of fever were examined (1) as to its reaction to the Vidal test, and (2) as to the presence of malarial parasites by a competent observer with the leisure and requirements for doing so, much light would be thrown on the diagnosis and classification of fevers common to Madras and on the vexed

tion of the degree of frequency with which the Native of India is liable to suffer from enteric

The presence of mosquitoes in the wards where cases of malarial fever are lying side by side with non infected patients, quite unprotected by curtains or even by punkahs in the cold weather, seems to afford every opportunity for the transmission of malarial infection, and it is possible that the unexpected rises of temperature for a day or two which may be seen on so many charts may be due to this cause

Round worms in adults as well as children were sometimes the sole cause of irregular and long continued fever. It is noteworthy that three or even four full doses of santoneine were sometimes successful where one or two doses had failed to expel a single round worm, though they were subsequently found to have been present in large numbers.

Three cases of empyema were transferred to the surgical wards. No observation was recorded as to the micro organism present in the pus.

Cases of severe anemia without ascertainable cause are met with from time to time. Examination and classification of the blood in such cases by a skilled microscopist would be desirable.

Cirrhosis of the liver with ascites was very commonly met with and was the cause of 13 deaths. In many of the cases no marked history of alcoholism could be obtained. I have little doubt that malaria and alcohol acting together determined a cirrhosis of the liver where neither cause acting alone would have been sufficient just as arsenic and alcohol have been shown to act together as a cause of peripheral neuritis.

Dilatation of stomach was met with from time to time, often found in patients from the Malabar coast and associated with anemia. It proved very intractable and, though not fatal, is the cause of much wasting and of misery to the patient. In such cases permanent relief can only be hoped for at the hands of the Surgeon, though temporary improvement may be obtained by medical treatment.

CAPTAIN H. FRASER, I.M.S., submits the report of the wards in the charge of the Fourth Physician. The following is a note on a disease which has been rarely recorded in India—

"A case of malignant jaundice (yellow atrophy of the liver) admitted on 8th November 1901 in a condition of pro found coma. The history was that the woman started vomiting four days prior to admission into hospital the vomited matter resembling coffee ground fluid. She complained of headache and was restless and irritable. Low muttering delirium soon succeeded followed by convulsions and coma. On examination the pulse was rapid and feeble. Tongue was dry and brown and there was an accumulation of sordes upon the teeth. The area of hepatic dulness was decreased. Bowels not moved for the last two days. Urine which was drawn off by catheter was intensely jaundiced. Skin cool and dry. Conjunctivae and skin jaundiced. She died 13 hours after admission."

We now come to the wards of the First Surgeon, which were in the charge of LIEUTENANT COLONEL J. MAITLAND, I.M.S., through the year. In these wards 622 operations were performed, or 60 more than the figure for the previous year.

Many of these cases have already been chronicled in the columns of the *Indian Medical Gazette*, so that we may pass over the notes on many cases of tumours, aneurysms, operations on lymphatic organs, amputations, several good cases of head injury, a case of splenectomy, a successful case of enterectomy (for tuberculous disease of the caecum) and for intestinal obstruction and 26 radical cures of hernia.

Owing to the comparative rarity of recorded cases of renal operations we quote the following from Colonel Maitland's report—

"(1) *Nephro lithotomy*—A Hindu aged 38 was admitted with signs and symptoms of hydro pyo nephrosis of five years' duration. A nephrotomy was performed and after emptying the cyst of fluid, two calculi were discovered and removed with some difficulty owing to their being embedded in the loculi of the diseased organ. The fragments which were very friable weighed three drachms and fifty grains.

(2) *Double hydronephrosis*—A Muhammadan boy aged 12 admitted with a history of having had a full five years' previously followed by the appearance of swelling in the right loin. Seven months previous to coming to hospital he passed urine of a milky colour. Latterly, the swelling in the loin had become painful. Whilst in hospital the urine one day suddenly became chylous looking and showed pus cells under the microscope, but did not give the chemical reactions of pus. Fifty two ounces of urine were passed per diem. A large tumour was present in the right loin having all the characters of a hydronephrosis. An operation was performed on the 3rd October. The usual incision being made, a large thin walled cyst containing clear fluid was exposed. The cyst was incised and found to be loculated. Drainage tubes and gauze drains were inserted, and the edges of the opening in the kidney fixed to the edges of the skin.

After the operation the boy got rapidly weaker and complained a great deal of pain in the abdomen and difficulty of breathing. He died twelve days later. At the post-mortem another large hydronephrosis was found on the left side. All trace of kidney substance had disappeared from the sac on the left side, but not entirely on the right side. The ureters were both dilated and the openings into the bladder constricted.

(3) *Case of nephrotomy for suspected renal calculus*—A Hindu barber, 25 years of age, was admitted with symptoms of renal calculus, i.e. frequent attacks of very severe renal colic in the left side. The left kidney was exposed by the usual incision in the loin. Palpation and exploration by means of needle yielded a negative result, although all parts of the kidney were thoroughly searched. An incision was then made into the lower part of the kidney and a sound passed into the pelvis. The latter as well as the calyces were thoroughly searched, but no stone detected. There was very little hæmorrhage. A drainage tube was inserted as well as gauze packing. The patient did well after operation, the wound closing rapidly, and he left hospital five weeks later. Subsequent to leaving hospital he had another attack of renal colic, although not of so severe a nature as the previous ones. Owing to the absence of any sign of stone it was thought that the pain must be due to "renal tension," but the recurrence of pain later on points to the probability of its being due to some other cause."

We note that one case of cleft palate was operated on successfully. Colonel Maitland thereon remarks that "it is a remarkable fact that very few cases of cleft palate or of harelip present themselves or operation in this country. In the case of cleft palates probably the majority die off early."

The following case of mycetoma is worthy of record—

"A Hindu lad 15 years of age, was admitted suffering from mycetoma of the groin and lower part of the abdominal wall. A year previously he had some disease of two toes of the right foot following a prick from a thorn. The toes were amputated. Nine months later a swelling appeared in the femoral region of the same limb and broke down and others of a similar nature followed. On admission to hospital he was found to be suffering from mycetoma of the femoral and inguinal regions. Several attempts were made to eradicate the disease by operative measures, but without avail. Mycetoma of any other part of the body except the hands and feet is very rare. Only one case of a similar nature to this has been previously recorded, and that one was also treated in this hospital. This case is of further interest, in that it furnishes strong evidence that the diseases may be transferred to distant parts of the body by the lymphatics."

We also note that in 24 cases the scrotum was removed for elephantiasis with no deaths, and that 16 cases of Cancer of the cheek, lip, mouth and penis were operated on.

CAPTAIN H. KIRKPATRICK, I.M.S., writes the report of the Second Surgeon's wards here also we note 16 cases of cancer, 9 of which were of the breast, two suprapubic lithotomies were done for cases of calculus in children, both were successful.

The report of the work of the wards of the Third Surgeon is written by CAPTAIN NIBLOCK, I.M.S., and contains much of great interest, and several of the subjects have already been discussed by that Surgeon in our columns, rendering further quotation unnecessary.

We cannot refer to the long list of interesting cases of all varieties, but can only quote the following extracts. We may note however, the good results of several operations on joints by tapping and injection of iodoform emulsion. One case of jaws was admitted, and prolonged treatment by mercury and iodide of potassium had no effect whatever.

The following cases are of interest—

• *Clottrizing granuloma*—Eight patients were admitted suffering from this disease of whom six were operated upon by complete excision, apparently with successful results. In two complete amputation of the penis and greater part of the scrotum was performed. The more I see of these cases the more I am convinced that complete excision is the only treatment which offers any hope of success. When skin grafting is necessary it should not be done until some weeks after for two reasons (1) to make certain that the disease has been thoroughly excised—if not it recurs very soon and the grafting will not take, (2) to avoid risk of infecting the part from which the grafts are taken.

The following case is unusually instructive—A Hindu clerk, aged 34. History of ulcer on prepuce which appeared in 1895 and resisted all treatment. Circumcision was performed, but the disease reappeared.

From that date the disease steadily spread, and gradually involved the whole of the penis, the pubis and a great part of the scrotum. He has spent the past seven years either in hospital or in wandering from one hospital to another, and was operated on more than twenty times without any improvement in his condition. The operations consisted in scraping, application of strong acids—chromic, nitric hydrochloric, etc., and of the actual cautery. In 1900 a surgeon in a

mo-fossil hospital thoroughly scraped the affected area and applied skin grafts taken from the right thigh. Result—the disease appeared four days afterwards on the area from which the grafts had been taken, and also reappeared in the original place.

On admission to the General Hospital in September last the disease was seen to involve the pubis, what was left of the penis (less than 2 inches), and part of the scrotum. A large patch, the size of the open hand, was also present on right thigh.

As the patient was unwilling to submit to amputation of the penis, scraping, various caustics (chromic acid, strong nitric and hydrochloric acids equal parts, formalin etc.), and the actual cautery were tried without success. Finally he consented, and complete excision of the diseased part (including amputation of the penis) was performed, much in the same way as for carcinoma. The patch in the thigh was also excised. Great care was taken to cut wide of the disease. Skin grafting was performed about three weeks afterwards.

At the present time—almost three months after the operation—there is no sign of recurrence.

Anastomosis of lymphatic into vein.—This operation, suggested by Dr. Manson (*Indian Medical Gazette* for August 1901), was performed three times on two patients. Both were young (ages 15 and 28), in one elephantiasis of both legs was just commencing, the other had commencing elephantiasis of one leg and the scrotum. In both, enlarged gland and lymphangectasis were present in the groins.

The operation consisted in removing the glands, ligaturing and tying the internal saphenous vein, introducing an enlarged lymphatic into a longitudinal slit in the proximal part of the vein, and securing it by a fine silk suture passing only through the outer coats of the vein and the lymphatic.

It is of course too soon yet to give any opinion as to the benefit or otherwise of the operations in these cases as they were performed quite recently (in August and September), but the immediate results were satisfactory.

Hepatic abscess.—Three operations with two recoveries and one death. One abscess was remarkable for its large size, containing 152 ounces of typical chocolate-coloured pus. The patient recovered after a prolonged illness.

Abdominal operations.—Twenty-four with 9 deaths. Those of special interest were—

(a) **Appendicitis.**—Eight patients (European one, Hindus seven) were operated on for this disease. All recovered. In 5 the appendix was removed. In seven suppuration was present.

It is noteworthy that patients in this country will not, as a rule, come to hospital until suppuration has occurred. In the solitary patient—a European—who was operated on before suppuration had occurred there had been several attacks at short intervals rendering life a misery.

(b) **Gastrotomy.**—For removal of a tooth plate from the oesophagus.

The tooth plate (accidentally swallowed) was jammed firmly in the oesophagus about two inches above the cardiac orifice of the stomach. An incision (large enough to admit the hand) was made in the stomach, and by means of the fingers the plate was drawn down with difficulty into the stomach and removed. The patient made a good recovery.

(c) **Acute intestinal obstruction.**—Three operations were performed for this condition. Two male patients who ultimately died, and one for acute intussusceptions patient recovered.

(d) **Ascites.**—Laparotomy with omentopexy, 2 operations. One patient left apparently cured, the other suffering from advanced cirrhosis of the liver—died from shock shortly after the operation.

(e) **Hypertrophy of spleen (malarial).**—An operation which was begun with the intention of removing this organ had to be abandoned for the same reasons as in the case reported last year, viz., extensive adhesions, the patient recovered.

(f) **Hæmorrhage from liver.**—This patient was explored by means of the aspirating needle in the medical wards and shortly afterwards sent up to the theatre for operation for hepatic abscess. It was there discovered that the liver was intensely congested and that there was an irregular rupture in its wall about three-quarters of an inch long from which blood was freely oozing. This was plugged with gauze and the abdominal cavity carefully sponged out. The plug was then removed and the liver sutured by deep catgut sutures. The abdominal wound was closed except the upper end through which a gauze drain had been passed reaching to the seat of rupture.

We call the attention of those surgeons in London who advocate so strongly the aspirating needle in liver abscess to this case. (See also the discussion at the Madras Branch, B. M. A. which we reported in full in March last, *I. M. G.*, March 1902 p. 112.)

Captain H. Fraser, I. M. S., gives a brief note on the 68 *post mortem* examinations made during the year on a large variety of diseases. There were three liver abscess cases with multiple abscesses and dysenteric ulceration, and one case of single

abscess with no sign of ulceration, past or recent. One *post mortem* was held on a case of typhoid in a native.

"The intestinal obstruction cases were of great interest. In one of them the obstruction was found to be due partly to a soft fleshy polypoid growth springing from the mucous and submucous coats of the posterior and outer wall of the cæcum behind the ileo-cæcal valve, on the posterior segment of which it dragged.

The cæcum itself in this case had a meso-cæcum $4\frac{1}{2}$ inches in length and was freely moveable, and the last 4 inches of the small intestines were pale and collapsed and appeared as if it had been constricted—an appearance which could only be explained by the assumption that this piece of intestine had been involved in a volvulus with the cæcum."

Captain T. H. Symons, I. M. S., gives a résumé of the work of the out-patient department, where no less than 66,997 patients were treated.

WE have now sufficiently indicated to our readers the vast amount of good medical and surgical work done in the General Hospital, Madras. We know that much good work is also done in the other similar large hospitals in India, but as long as they are content to have their annual reports pigeon-holed and not published it is not possible for medical men unconnected with these institutions to know anything about that work. The amount of information on the rarity or commonness of disease in India which now is lost on account of this silence is not to be calculated. We congratulate the management of the Madras Hospital on their wisdom in letting the medical public know what is being done in their hospital, and we commend the example of Madras to her hitherto "silent sisters."

THE SANITARY COMMISSIONER'S REPORT, BENGAL

THIS report is submitted by Major H. J. Dyson, F.R.C.S., I.M.S., the Sanitary Commissioner, who has since gone on two years' furlough after 7 years' service in the Sanitary Department. The Provincial birth rate was 38.5 and the death rate 31.04 for the year 1901. The falling off of the death rate to close on the five year average was mainly due to the absence of cholera. This disease had raged in an unprecedented manner in the previous year. Orissa, which always has a bad reputation for cholera, suffered most. The disease is always endemic in Orissa, and especially at Puri where it assumed epidemic proportions in March. This was traced to contamination of the drinking water at Balunga mela, and the Government Resolution states that want of sanitary precautions on the part of the local authorities is a likely cause. On the other hand, the local authority in the person of the District Magistrate says "that the whole resources of the District Board would be swallowed up if it undertook the responsibility of making proper sanitary arrangements at melas."

It seems to us that the sanitation of the great centres of pilgrimage is not so much a local, as a provincial or even Imperial question. It is not possible for a small district like Puri to provide funds for the proper sanitary arrangements of a place like Juggernath. But granting that want of sanitary precautions has caused a great outbreak in a pilgrim centre, the intensity of the spread of cholera will depend upon the degree in which the water of villages and towns en route is polluted by the infected among the returning pilgrims, where the water supply of such villages, &c., is abundant, little cholera will prevail, but whereas in 1901 the village tanks and water supplies were low and scanty, pollution easily took place and cholera became widespread, therefore we venture to think that the Sanitary Commissioner's opinion that the short rainfall was responsible is not "doubtful," but he might have explained this view at greater length in a report which is read and criticised by non-medical men. In the beginning of his report Major Dyson has called attention to the increasing difficulty of getting good drinking water in many of the rural areas owing to the silted up condition of the tanks, which cannot nowadays be cleaned out as cheaply as hitherto owing to the rise in the wages of coolies. It is obvious that the sanitation of the water the more dangerous does any accidental pollution of it become. Disinfection of wells by the use of permanganate of potash was carried out in many districts, generally with good results.

We are glad to see that 3,335 anti-cholera inoculations were performed among coolies emigrating to Assam, and 58 among those going to the West Indies. Now that Puri is no longer the chief recruiting centre, many fewer coolies pass through it. It is to be hoped that opportunity of inoculation will be given at other centres. The returns to show the results of inoculation are very few but what they are show the advantages of the process. Of 275 uninoculated coolies 8.3 per cent. got cholera, and of 414 inoculated coolies only 1.2 per cent. got the disease and none died of it.

The year 1901 was marked by a severe prevalence of Small pox, no less than 37,680 deaths being recorded from this cause. It is remarkable and possibly significant that 1901 was a bad small pox year in Europe as well as in India. The disease was especially bad in Midnapore, Bankura, Calcutta, Cuttack, Balasore, Puri, Palaman and Singhbhum. In Cuttack the disease is increasing in virulence, and is to a great extent spread by pernicious bands of inoculators.

The Civil Surgeon, Major J. T. Culvert, I.M.S., writes— "Small pox prevailed in epidemic form in this district throughout the year. The smallest number of deaths from this disease occurred during the months of November and October, and the largest number during March and April.

Deaths were reported from all the thanas of the district. The disease specially prevailed in Kendrapara, Aul, and Salepur thanas. There is no doubt that a large number of the deaths from this disease are preventible. Inoculation is carried on throughout the district, and thus the disease is spread. In thana Salepur the practice seems to be unusually prevalent. When the outbreak of small pox is mild in character, children of from 5 to 10 years of age are wilfully exposed to the disease. On returning to their own villages an outbreak results, which is not confined to those thus exposed, but spreads amongst the unprotected generally with disastrous results."

We observe that plague is now included in this report, though for some years past it, for some reason, was always dealt with in separate reports.

Plague has not yet spread over all Bengal, in fact four whole Divisions escaped last year, viz. Rajshahi, Dacca, Chittagong and Orissa, but it has increased in the affected districts in a steady way from 31,000 seizures to 52,000, while Calcutta practically stood still at about 8,000 deaths. The high percentage of deaths to attacks in Calcutta points clearly to the known fact of great concealment of cases.

The sudden disappearance of plague in May in Monghyr is attributed to climatic causes by Major I. A. Rodgers, I.M.S., the Civil Surgeon. It is probably due to the same causes as make plague to cease to a large extent in the hot weather in the Punjab, and thus we incline to think is due to the better ventilation and the more fresh air in houses in the hot weather than in the cold, when poor people close up every cranny to keep out the cold.

It is notable that popular sentiment was very strong against disinfection methods, and favoured evacuation. This is remarkable. The varying degrees of popular sentiment in India with regard to methods of fighting plague show clearly enough that it is the men, not the measures, they object to. Where a faithful man is in charge any measure of precaution is well taken when as must too often be any measure be it inoculation, disinfection or evacuation, is in the hands of subordinate officials and their assistants, it almost invariably fails. The one fact which the six years' bitter experience of plague has enforced is the absolute necessity for using only a superior class of officer to carry out the work. Those who know the work will understand exactly what we mean.

Inoculation was carried out in a few places, notably by Major C. E. Sunder, I.M.S., the Civil Surgeon of Gaya. The following figures showing the results of inoculation during an outbreak in Patna Jail are given by Major F. P. Maynard, I.M.S.—

Daily average number of non inoculated prisoners	186.9
Daily average number of inoculated prisoners	101.9
12 attacks among non inoculated prisoners	6.43 per cent
8 deaths ditto ditto ditto	4.28 "
5 attacks ditto inoculated ditto	2.6 "
1 death ditto ditto ditto	0.52 "
Percentage of deaths to attacks among non inoculated	66.66
Percentage of deaths to attacks among inoculated	20

What is called "Fever" represented no less than 70 per cent. of the total mortality of the Province.

No definite information could be obtained as to any instances of immunity of any villages from fever, and inquiries from Civil Surgeons only pointed to the view that the type of fever prevailing in the province was chiefly malarial. This may be true, but we would like to see the question thoroughly investigated by an expert commission. A disease to which is attributed 70 per cent. of the total mortality of the province is one which certainly deserves to be very thoroughly investigated, and it is only by special commissions and the use of modern methods of investigation that we shall ever learn the real nature of the diseases of this country. Major Dyson concludes his report with a statement of his personal proceedings. During the year he spent no less than 210 days on tour, inspected 40 municipalities, and in his capacity as Deputy Inspector General of Civil Hospitals he inspected

57 hospitals, he travelled over 15,000 miles by rail, 318 by steamer and 515 by road, and delivered 20 lectures on hygiene to the students of the Medical College. He most justly complains of the lack of Deputy Sanitary Commissioners, e.g., during the past seven years there has been no Deputy Sanitary Commissioner for the Metropolitan Circle for two years seven months and three days, and in the Northern Circle the post has been vacant for over three years and five months. Truly no department in India has ever been so handicapped. Under the circumstances we can well understand that Major Dyson's task has been a disheartening one, but we believe it is very generally recognised that no previous Sanitary Commissioner has ever had such a trying time of plague and general stress, and it must be admitted that much of the undoubted progress and interest in sanitary matters which have characterised the past seven years in Bengal is fairly to be credited to the work of the Sanitary Commissioner.

THE ASSAM SANITARY REPORT

In the first year of the new century the Assam birth rate showed an increase and a substantial decrease in the death rate. Registration in the compulsory areas is still incomplete, and Colonel Cair Calthrop, I.M.S., the Sanitary Commissioner, points to the absurdly low figure of 12.8 for Tezpur as showing the returns to be in several cases worse than useless. In one town, Narpeta, so high is the birth rate that it is explained that it being a holy place, women resort there for accouchement.

The death rates vary enormously, and owing to the smallness of the numbers, they cannot be in many cases advantageously criticised.

It is useless to repeat the figures of infantile mortality, as they are looked upon in most cases as practically worthless. We note that the checking of Vital Statistics by the Inspectors of Vaccination is done "in a perfunctory and apathetic manner." All Civil Surgeons agreed, and Colonel Cair Calthrop agrees with them that the superior vaccinating staff should be brought on one provincial list and the present class of men replaced by others of the Hospital Assistant class, who are far better educated and over whom far greater control could be exercised.

The year 1901 was a healthy one the death rate being 27.8 against a 15 year average of 29.06. Cholera had a death rate of less than half the average. There was no violent epidemic, but a succession of small outbreaks in Cachar and Kamrup districts, including a severe one in the Railway camp at Tipling Ghat. Colonel Carr Calthrop wisely but regretfully does not attribute this decrease of cholera to improved sanitation. Out of a labour force of 263,372 coolies, there were 478 deaths from cholera, or a ratio of 1.81 per mille in the Surma Valley, and out of 351,477 coolies in the Brahmaputra Valley the ratio was 2.43, the disease was not bad anywhere and Nowgong was phenomenally clear. It is also satisfactory to see that the rate of mortality among tea garden coolies in transit from Goalundo to the garden has much diminished owing to the precautions taken in selecting the coolies and the care taken of them on board.

As regards small pox there was an increase owing to several outbreaks in the Sylhet district. It is reported that most if not all, of these outbreaks followed the visits of gajals, or inoculators, and the Civil Surgeon suggests that the Act against inoculation should be extended to the whole of this district.

As regards malarial fevers the year 1901 was more malarious than the year before, and the actual death rate attributed to fevers, 15.8 per mille, is exactly that of the 15-year period, 1884-98. As regards the decline of Kala azar we confess to being at a loss to appraise the exact value of the figures for this disease. According to L. Rogers' report on the subject, this disease is a severe form of malarial cachexia, and if so, we do not see how it can be clearly differentiated from other cases of advanced malarial cachexia. But to judge from the reports such differentiation is possible and Senior Hospital Assistant K. C. Das, the special medical officer whose good work is commended in the report, in his itinerations in Sylhet has discovered a large prevalence of the disease, where up till 1900 "only a few casual cases" were reported. This looks like a mere question of diagnosis. In Sylhet, we presume, the cases were called fever, till on the arrival of Babu K. C. Das he pointed out that such cases were identical with the disease which had decimated Nowgong and other districts.

Bearing this difficulty in mind, it is satisfactory to read that Kala-azar has almost disappeared from Goalpara, is much less in Kamrup, and only exists to any serious extent in Nowgong and Darrang districts. Sibsagar has been protected, so far, by the belt of forest dividing it from much infected Nowgong and the disease has never showed much power of spreading along the north bank of the river. In

Durrang a few fresh villages are reported infected, but in Nowgong "only chronic cases" come for treatment. A table is given showing the rise and decline of this deadly disease for eight years in the districts affected*—

Year	Deaths from kala azar
1894	13,112
1895	15,847
1896	15,605
1897	18,597
1898	16,458
1899	14,199
1900	9,015
1901	5,831

The death rates from Diarrhoea and Dysentery were for the Province 2.19 or less than the 15 year average, which is 3.01. There are astonishing differences between districts, which are not easy of explanation. When we read that the death rate among garden labourers from these diseases was 7.5 per mille, and only 3.03 among the ordinary population, it is obvious that it is purely a question of more accurate registration of disease. On the tediousness the Medical Officers and their Assistants diagnose all the cases they meet among the villages the ignorant headman does the work of diagnosis. The same explanation applies to bowel complaints in Jail, where diagnosis is as accurate as it can be. The returns of deaths from bowel complaints among the general population are absurdly inaccurate in every Province in India.

We are glad to see an increased sale of pice packets of quinine. We note that an American fruit evaporator was purchased and the machine is now under trial at Goalhati Jail. It is hoped it may be practicable to dry limes and fresh vegetable for prisoners lunatics &c. We look forward with interest to a report on the working of this machine.

We congratulate Colonel Carr Calthrop on his efforts to introduce "mosquito brigades" in many parts of Assam. The apathy of the people is notorious, and they will not even allow the staff to enter their compounds.

A wise step has been taken in bringing under sanitary control the camps of railway coolies.

Correspondence.

INFORMATION, TO PROCURE A COPY OF THE CIRCULAR OF A JUDICIAL COMMISSIONER, REQUIRED

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In your valuable number for June 1902 (special medico legal number), at page 240, it is mentioned by Major A. G. Hendley, I.M.S., in the article headed "Medical Evidence in India"—"All courts are provided with instructions to magistrates in the shape of a Judicial Commissioner's circular, setting forth in great detail the procedure to be adopted in examining medical witnesses, with no less than ten examples of series of questions that may be put to the witness in cases of poisoning, wounds, hanging, drowning, rape, insanity, &c."

The questions of course intended to prevent magistrates running off the rails are excellent in their way, and might, with great advantage be in the hands of every medical subordinate, who would thus learn what points to particularly note in his report, and matters on which to make himself 'safe' before going into court."

Will you or some one of the *Gazette's* readers oblige the undersigned by mentioning the office to which an application may be made for a copy of the above quoted circular?

22nd July 1902.

Yours, &c,
J M P

MY STORY OF A DEMON—THE CARBONIC OXIDE GAS

MY PUNISHMENT FOR WANT OF FORESIGHT

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The evening of the 8th January last was very cold so I ordered my servant to keep a fire in my sleeping room, where I used to live with my family, consisting of my wife two children, and a servant girl. The doors and windows were tight enough to exclude any cold from outside. After taking our evening meal, we all went to our respec-

tive beds at 9 P.M. At about midnight my wife called me up and complained of intense headache. I attributed it to her being exposed to the fire while cooking in the evening, and applied some lavender water to her head. An hour later she became very restless. Her pulse was full and frequent, skin hot. I thought she had got fever and that that was the cause of all her complaints. At this time my little child tried to get up from the bed but tumbled down and began to scratch his head and cry. The other child vomited in the bed clothes.

A few minutes later I myself felt giddy and lay down. Even up to that moment I had not the least suspicion of any thing going wrong in the room. Next I noticed the maid servant going out of the room to vomit. My headache gradually increased, and in a quarter of an hour's time became agonizing. Then I sat up to get out of the room, but no sooner had I put my feet on the floor, than all my senses left me and I fell heavily on the ground near the door which was left open. I did not know how long I had been unconscious, most probably 15 to 20 minutes. When I regained my senses, I saw my wife lying insensible on the middle of the floor (probably on getting up to attend on me), and that my clothes had become soiled by involuntary motion and urine during the fit. The headache was even then intense and nauseating. However I managed to call out though very faintly to my servant who was sleeping in another room. But no sooner did he enter my room than he complained of suffocation, shrieked out, and began to stagger.

Then, and not till then did I understand my case. I ordered him to open out all windows at once, to remove the fire bucket from the room, and to pour cold water on to our heads. The draughts of cold water and the chill night air brought us all to our senses, but the headache persisted for four days, which was of a boring character through the temples.

Had not the maid servant providentially left the door ajar in going out, thus admitting fresh air, all of us would have been dead in a few minutes by carbonic oxide gas poisoning, generated by the presence of burning coal in a closed room, and the laymen would have ascribed our deaths to ghosts and legends of haunted houses.

Every medical man must have read in books and some might have seen cases, but my practical experience teaches me never to keep a fire in a closed room, and I shall be happy if my professional brethren reap any advantage at my cost, as this was my punishment for want of foresight.

It may be noted that there was no smoke from the fire.

Since my case I have been informed of a similar accident in the house of a gentleman at Calcutta under the same circumstances.

Yours, etc.,

K P BANERJEE,

Asst Surgeon, Bettiah,

DIST CHAMPARAN

A MEDICO LEGAL CASE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—On the 3rd August 1902 I held the *post-mortem* examination on the body of a native female child aged about 4 months.

The police reported that about 15 days before her death she was accidentally kicked by her brother in law, subsequently, 3 days before her death, she was thrown on the ground by the same brother-in law from the lap of her sister.

The child's mother brought her to the Campbell Hospital where she was under treatment. On admission no sign of external violence was observed on the body. On examination a big tumour of the size of a fetal head was observed in the right iliac fossa, extending above the level of the umbilicus.

The officer in charge of the Out-door Department informed me, about two months ago the child was brought to that dispensary and they discovered the tumour as well.

During her stay in the hospital the Teacher of Surgery of the Campbell Medical School operated on her and removed the tumour, which was bigger than an ordinary fetal head. It was attached to the right ovary, and the fimbriated extremity of the Fallopian tube of that side was intimately adherent to the tumour.

The child died from the shock and I held the *post-mortem*, being asked to do so by the Suburban Police.

I found the wound in the abdomen to be healthy-looking, and the peritoneum, excepting the divided portion, to be healthy. There were very few recent bands of adhesion, which were very thin, in the right iliac fossa, matting together the coils of intestine there. The appendix was healthy but tied to the ascending colon by the recent adhesions. The left ovary with the Fallopian tube was perfectly healthy and so was the little uterus.

No secondary growth anywhere was observed. On microscopic examination of the tumour it was found to be a sarcoma.

* See above paper by Dr Bentley on the supposed identity of Kala fever with Malta fever.

The points for special notice in the case were—first, the existence of a malignant tumour in such an infant and that in connection with one of the ovaries. Secondly, no sign of injury, either external or internal, around the tumour or in any part of the body. Even if the history were true, there was nothing to indicate that that had anything to do with the death.

Yours, &c,

DEVENDRA NATH ROY,

Teacher of Medical Jurisprudence,

AUGUST 7TH, 1892.

Campbell Medical School

Service Notes.

THE following are the medical appointments for the Delhi manœuvres, preliminary to the Imperial Duihai—

Principal Medical Officer on the General Staff, Northern Army, Surgeon General A Scott Reid, I M S. Secretary to P M O, Lieutenant-Colonel Whitehead, R A M C.

P M O, Cavalry Division, Colonel F J F Supple, R A M C.

P M O, First Infantry Division, Captain T S Weir.

P M O, Second Infantry Division, Colonel A H Anthonisz, R A M C.

Southern Army, P M O, on General Staff Surgeon General Burnett, R A M C. Secretary to P M O, Lieutenant Colonel L A Waddell, C I E, I M S.

P M O, Second Cavalry Division Colonel W E Johnson, R A M C.

P M O, Third Infantry Division, Colonel H J P Barrow, R A M C.

With the First Cavalry Division, there will be section C, B F Hospital, and section A, 38 N F Hospital. With the Second Cavalry Brigade there will be section B, 3 B F Hospital, and section A, 58 N F Hospital. With the Third Cavalry Brigade there will be sections A and B, 41 N F Hospital. With the First Infantry Division there will be section D, No 3, and section A, No 5 B F Hospitals, and section C, No 40, and section B, No 56 N F Hospitals. With the Second Infantry Brigade there will be section A, No 3, and section A, No 20 B F Hospitals, and section C, No 31, and section A, No 45 N F Hospitals. With the Divisional troops there will be section A, No 8 and section A, No 15 B F Hospitals, and section A, No 31 and section B, No 29 N F Hospitals. The Second Infantry Division will be accompanied by section A, No 9 and section A, No 11 B F Hospitals and sections B and C, No 38 N F Hospital. The Fourth Infantry Brigade will have section A, No 1 and section D, No 2 B F Hospitals, and section C, No 32, and section A, No 8 N F Hospitals. With the fifth Infantry Brigade there will be section C, No 20 B F Hospital and section D, No 31, and section D, No 38 N F Hospitals. With the Divisional troops there will be section A, No 14, and section C, No 15 B F Hospitals, and section A, No 29, and section D, No 52 N F Hospitals. With the Corps troops there will be section D, No 1 B F Hospital, and section C, No 34, and section A, No 42 N F Hospitals.

With the Southern Army, the Second Cavalry Division will have section B, No 1 B F Hospital, and section A, No 47 N F Hospital. With the Fifth Cavalry Brigade will be section B, No 41 and section A, No 46 N F Hospitals. With the Third Infantry Brigade will be section B, No 11, and section B, No 14, B F Hospitals, and section D, No 23, and section B, No 48 N F Hospitals. With the Seventh Infantry Brigade there will be section A, No 19, and section C, No 22 B F Hospitals and section A, No 41, and also a section of No 61 N F Hospital. With the Divisional troops there will be section C, No 1 B F Hospital and sections A and B, No 59 N F Hospitals. The Corps troops will be accompanied by section A, No 10 B F Hospital, and section A, No 30 N F Hospital.

There will also be General Medical Hospitals established for 200 British and 200 Native troops at Umballa, and 200 British and 400 Native troops at Delhi.

THE monument of Zephaniah Holwell, the Medical Officer who was Governor of Calcutta in the days of the "Black Hole" in 1757, is now completed. It is situated at the corner of Dalhousie Square, within a few dozen yards of the original site of the black hole, now occupied by the General Post Office and the E I Ry Offices. The monument is a replica of the former one to Holwell, which used to exist in Calcutta till removed.

MAJOR C B PRALL I M S., has permanently joined the Jail Department, U P.

LIEUTENANT W H DICKENSON, M B, I M S., is appointed to be a probationer in the Chemical Examiner's Department and is posted to the Bombay Chemical Laboratory.

THE services of Lieutenant Campbell Dykes, I M S., are temporarily placed at the disposal of Assam.

THE gallant conduct of Lieutenant W H Cox, I M S., in attending to the wounded in the firing line under a heavy fire, is commended by the General Officer Commanding the Waziri operations to the notice of H E the Commander in Chief.

THE following extracts are taken from the Report on the Waziri Blockade operations—

"Colonel G McBride Davis, M D, O B, D S O, I M S., Principal Medical Officer, is an officer of very great practical experience and administrative ability, to whose power of organisation it is largely due that the medical arrangements have been able to cope with the situation."

"Lieutenant-Colonel W A Mawson, I M S., Principal Medical Officer, Derajat District, had charge of the medical arrangements during the passive blockade and was largely responsible for these during the active operations. Before the arrival of the field hospitals he had, with scanty means, to provide for the medical needs of a number of regiments which arrived with hospitals on the relief scale, and this he did in an efficient manner. He has displayed administrative ability and rendered valuable service."

CAPTAIN P F CHAPMAN, I M S., is appointed to act as Civil Surgeon of Jubbulpore during the absence on leave of Lieutenant-Colonel H K McKay, C I E, I M S.

WE understand that Lieutenant Colonel Roderick Macrae, I M S., has been granted two months' extension of furlough.

CAPTAIN N R T RAINIER, I M S., Civil Surgeon of Chanda, O P., is granted six months' leave (m.c.).

MAJOR A E ROBERTS, I M S., Civil Surgeon, whose services have been replaced at the disposal of this Government by the Government of India, Home Department, is granted furlough out of India, combined with such privilege leave as may be due to him for a total period of one year, eleven months and seventeen days, with effect from the 15th July 1902 or subsequent date.

MAJOR J K CLOSE, I M S., is granted privilege leave, and Dr H A Macleod acts as Civil Medical Officer of Moradabad, U P.

ON return from leave Lieutenant-Colonel R. Cobb, I M S., is again posted to Barisal as Civil Surgeon, and Captain Robertson Milne, I M S., is placed on special duty to investigate cerebro-spinal fever.

CAPTAIN E WILKINSON, I M S., Chief Plague Medical Officer, Punjab, has taken over charge of the office of Sanitary Commissioner, Punjab, from Lieutenant Colonel J Bamber, I M S., proceeded on privilege leave. Captain Wilkinson performs the duties of Sanitary Commissioner in addition. Lieutenant W F Harvey, I M S., took up the duties of Deputy Sanitary Commissioner, Punjab, on the 1st July.

THE Public Works Department of the United Provinces have begun the reconstruction of the principal building of the Bacteriological Laboratory at Mukhtesar near Naini Tal, the original structure having been found defective in many respects. A sum of half a lakh is to be spent on the new building.

MAJOR ALCOCK, I M S., F R S., the Superintendent of the Indian Museum, now on leave, has in the press two books, one an account of his work in the Pamirs, and the other, which will be published by Murray, is entitled "A Naturalist in the Indian Seas," and is based on Major Alcock's work and experiences when Surgeon Naturalist on the R.I.M. Ship Investigator.

IN the event of the 9th Gurkhas going to China, Lieutenant McKendrick will, it is said, be the Medical Officer in charge.

LIEUTENANT H W ILLIUS, I M S, took charge of the civil medical duties in the Tochi Valley, relieving Lieut F. T. Thompson, I M S

THE following Medical Officers in civil employ, Madras, were on leave on 1st August, viz—Lieut Col H Allison, I M S, till 5th August 1902, Lieut. Col W A Lee, I M S, till 21st March 1903, Lieut. Col R. Pemberton, I M S, till 11th November 1903, Lieut. Col H M Hakim, I M S, till 3rd January 1903, Lieut. Col A J O'Hara, I M S, till 4th November 1902, Major A E Grant, I M S, till 4th September 1903, Major O E Fearnside, I M S, till 31st October 1902, Major G G Gifford, I M S, till 2nd October 1902, Major C H L. Palk, I M S, till 2nd September 1902, Captain R. H. Elliot, I M S, till 23rd September, 1903

CAPTAIN P C GABBETT, I M S, Civil Surgeon of Coconada, is appointed District Medical and Sanitary Officer, the Nilgiris.

CAPTAIN H ST J FRASER, I M S, returns from leave on 26th November 1902, and Capt. T E Watson, I M S, on 14th October 1902

CAPTAIN W J NIBLOCK, I M S, was due back in Madras on 1st November 1902, but his privilege leave has been converted into 6 months' furlough (m c)

CAPTAIN F D BROWNE, I M S., Superintendent, Central Jail, Cannanore, is granted 3 months' privilege leave till 4th October 1902.

CAPTAIN W LETHERIDGE, I M S, returns from 14 months furlough on 15th January, 1903

CAPTAIN F F ELWES, I M S, has been appointed to act as District Medical and Sanitary Officer Godavari, with medical charge of the Central Jail at Rajahmundry.

THE Adams Wylie Hospital was recently opened by H E the Governor of Bombay. This hospital has been erected by Mrs. Adams Wylie in memory of her late husband, Lieutenant O H B Adams Wylie, I M S, who died at Bloemfontein on 2nd June 1900 while serving in S African War. The erection of this hospital for the poor of Bombay is entirely due to the energy and devotion of Mrs. Adams Wylie

CAPTAIN E T O'MEARA, I M S, D P H, has been elected a fellow of the Royal Institute of Public Health

THE special grant of 90 days' China leave is announced in Milly Dept. letter No. 4027 China, dated 14th June 1902, and is published in C in O's orders 482, dated 7th July 1902. This special leave must be taken before the end of this year, irrespective of season, but the additional 30 days will not be given in conjunction with accumulated privilege leave. This cancels G O C C Nos 450 of 1901 and 274 of 1902

Special leave South Africa.—It has been decided that officers acting for those absent on special South African leave will be granted, with retrospective effect, the full staff pay of their acting appointments from Indian revenues, instead of half staff pay, as authorised in clause V of G O C C No 386 of 1901

Dress of Officers.—Attention is invited to Army Order 107, dated 1st May 1902, paragraph (a) of which is made applicable to India and is republished for information

Army Order 107 (a) Dress of Officers Badges of Rank.—His Majesty the King has been graciously pleased to command that the rank of second Lieutenants, Lieutenants, and

Captains shall in future be denoted, on all uniforms, other than the service dress jacket, by the following badges—

Second Lieutenant	1 star
Lieutenant	2 stars
Captain	3 "

The badges of other ranks will remain as at present.

Dress Mess Jackets.—Reference line 5, page 9, Volume VII (Dress), Army Regulations, India. It is notified for information that white mess jackets should have rolled collars, as laid down for new cloth mess dress by 2nd clause, para 14 of addenda to Army Order 39 of 1902. The change, however, need not be made this year

CAPTAIN G LAING, I M S, of the Bombay Research Laboratory, is granted 3 months' privilege leave from 6th September

ON the appointment of Major J Jackson, I M S, as acting Inspector General of Prisons, Bombay, Captain G C Laing, I M S, acts as Superintendent of the Yerrada Central Prison.

CAPTAIN S H BURNETT, I M S, Civil Surgeon of Hyderabad, Sind, takes over medical charge of the Central Prison there, Mr O H Brierley being in executive charge, both relieving Captain Laing transferred to Yerrada

THE Services of Major W B Lane, I M S, for several years in the Jail Department of the Punjab, are now permanently placed at the disposal of the Punjab Government.

SURGEON GENERAL S C C DERENZI, O B, I M S, retired, a well known sanitarian, has been made K C B

LIEUTENANT COLONEL P F O'CONNOR, I M S, lately P M O with the Indian Contingent in China, is made O B

MAJOR W H W ELLIOT, M B, I M S, who has been in charge of the Indian Field Hospitals in Natal during the war, was made a Companion of the D S O, not O B as stated in our last issue

THERE were some 70 candidates for 30 vacancies for the R A M C. Entrance Examination in London in July

THE following notifications appear in the *Gazette of India* of 19th July 1902—

The services of the undermentioned officers are placed temporarily at the disposal of the Government of Madras—

Lieutenant W H Tucker, I M S
Lieutenant Manmatha Nath Chaudhuri, M B, I M S
Lieutenant F F Elwes, M B, I M S

The services of the undermentioned officers are placed temporarily at the disposal of the Government of Bombay—

Captain H Bennett, M B, I M S (Bombay)
Captain C H S Lincoln, I M S
Captain F H G Hutchinson, M B, I M S

The services of the undermentioned officers are placed temporarily at the disposal of the Government of the Bengal

Captain S Anderson, M B, I M S
Captain J W F Rait, M B, I M S
Captain H B Meakin, M D, I M S
Captain H Innes, M B, I M S

The services of Captain T Hunter, M B, I M S are placed temporarily at the disposal of the Government of the United Provinces

The services of Captain E L Perry, Indian Medical Service (Bengal), are placed temporarily at the disposal of the Government of the Punjab

The services of the undermentioned officers are placed temporarily at the disposal of the Government of the Punjab for employment on plague duty—

Lieutenant W F Harvey, M B, I M S
Lieutenant G Browne, I M S
Lieutenant I L MacInnes, M B, I M S
Lieutenant M Corry, M B, C M, I M S

The services of Lieutenant F V O Beit, M B, Indian Medical Service, are placed temporarily at the disposal of the Government of Burma,

CAPTAIN E L WARD, I.M.S., joins the Punjab Jail Department.

COLONEL J MCCONAGHEY, M.D., is confirmed in his appointment as Inspector General, Civil Hospitals, Punjab, from 16th June, on which date Surgeon General L D Spencer retired.

LIEUTENANT COLONEL F F MACCARTIE, I.M.S., C.I.E., Assay Master, is appointed to act as Mint Master during the absence of Lieutenant-Colonel Porter, R.E., on leave.

THE King has approved of the retirement of Lieutenant Colonel C W Owen, C.I.F., C.M.G., I.M.S., from 15th March 1902, and Lieutenant Colonel James Young, I.M.S., from 31st March 1902.

CAPTAIN J S S LUMSDEN, I.M.S., Civil Surgeon of Bahraich, holds visiting charge also of Gonda District, *vice* Captain W Young, I.M.S., on leave.

MAJOR J K OLOSF, I.M.S., holds visiting charge of Bijnor District *vice* Captain G Hutcheson, I.M.S., on deputation.

CAPTAIN T HUNTER, I.M.S., who has joined Civil employ, U.P., was posted to Muttra and on being relieved was appointed Officiating Superintendent of the Agra Central Prison but immediately after was transferred to act for Major E Hudson, F.R.C.S., in charge of the Naini Central Prison near Allahabad.

ON the retirement of Lieutenant Colonel D Basu, I.M.S., Senior Assistant Surgeon M L Mukerjee is appointed to the medical charge of Rangpore District.

CAPTAIN J M WOOLLEY, I.M.S., is granted a further extension of leave (m.c.) for three months by the Secretary of State.

MAJOR H S MCGILL, R.A.M.C., is confirmed as Sanitary Officer, Army Head Quarters, with effect from 25th October 1901.

DR W H FORWOOD, who has just succeeded Dr Steinberg as Surgeon General U.S. Army, is due to retire in September so that he will have but little opportunity to make much impression upon the administration.

Examinations in Urdu—The Government of India have sanctioned the following procedure being observed throughout India with reference to the time within which candidates at examinations in Urdu by the higher and lower standards should be required to complete their translations of Urdu into English and English into Urdu.

LOWER STANDARD—Written translation of a simple piece of English into Urdu—time allowed three hours. An interval of one hour will then be allowed, after which the *viva voce* examination of each candidate in text-book, manuscript, and conversation will be proceeded with, occupying such time as may be necessary, each candidate being required to leave immediately his *viva voce* examination is completed without communicating with other candidates.

HIGHER STANDARD—Written translation of English into Urdu—time allowed 2½ hours. At the expiration of the 2½ hours the candidate, having given in this exercise, will receive from the president of the board a copy of the text book with instructions as to the passage set for the written translation into English for which ½ hour is allowed. After an interval of an hour the rest of the examination will be proceeded with, the *viva voce* examination of each candidate in reading and translating manuscript sentences and the conversation (colloquial) occupying such time as may be required. Each candidate will leave immediately his *viva voce* examination is completed without communicating with other candidates.

Kaisar-i-Hind Medal—Officers and others in possession of the Kaisar-i-Hind Medal are informed that the medal should be worn in full dress and the ribbon in undress uniform.

The medal has precedence of war medals and will be worn immediately before Queen Victoria's Jubilee Medal.

China Medal—In continuation of G.O.C. No. 350 of 1902 it has been ruled that paragraph 3 of Army Order 82 of 1902 means that Indian troops who embarked for China on or before 31st December 1900 are eligible for the China Medal but not those who embarked after that date. The dates of eligibility for the gratuity (*tide* G.O. No. 274 of 1902) remain unchanged.

LIEUTENANT COLONEL D F BARRY, I.M.S., Civil Surgeon of Cawnpore holds visiting charge also of Hamirpur, during absence of Honorary Lieutenant G Hynes.

CAPTAIN H WALTON, F.R.C.S., I.M.S., joins the Civil Medical Department, U.P., leaving that of Bengal.

CAPTAIN HOLDICH, L.F.C.E.S.F., F.R.C.S., I.M.S., comes to Bengal, and is posted to the Presidency General Hospital.

LORD ROBERTS distributed the prizes to the successful students at Netley Hospital on Tuesday. Addressing the students he enumerated some distinguished members of the Indian Medical Service among others the late Director General Robert Harvey, whose life was one long record of activity and usefulness. He commended the natives to their especial care and protection and advised them to lose no time in learning the language and cultivating their friendship.

LIEUTENANT COLONEL J MCCOGRY, I.M.S., on return from leave is again posted to Karachi as Civil Surgeon.

THERAPEUTIC PREPARATIONS

WE desire to call attention to the admirable and useful **Tablets of Lithium and Sodium Sulphate** prepared by Messrs Burroughs, Wellcome & Co.

Notice.

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR *The Indian Medical Gazette* c/o Messrs Thacker, Spink & Co. Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS Messrs Thacker, Spink & Co., Calcutta. Annual Subscriptions to the *Indian Medical Gazette* Rs. 12, including postage.

THE HARVEY MEMORIAL FUND

7TH LIST OF SUBSCRIPTIONS

Already acknowledged	Rs 2,504
Capt C J Robertson Milne, I.M.S.	32
Lt Col Dantra, I.M.S.	16

BOOKS, REPORTS, &c, RECEIVED

Journal of Agriculture Tropicales
Triennial Report on Medical Institutions in Bengal
The Assam Sanitary Report
The Bengal Sanitary Report
The U.P. Sanitary Report
The Bengal Jail Administration Report
The Reformatories Report
Lewis and Balfour's Public Health and Preventive Medicine (Wm Greco & Co.)
The Soil and Contagia Poore (Longmans & Co.)
Text book of Anatomy edited by D I Cunningham (Young J Pentland)
The Report of the Madras General Hospital
Cerebro spinal Meningitis by Williamson (Thacker, Spink & Co)

COMMUNICATIONS, LETTERS, RECEIVED FROM —

Lieut W Greig, I.M.S., Bombay. Dr J Veld Cook, London. Major D M Moir, I.M.S., Calcutta. Lt Col J Maitland, I.M.S., Madras. Lt Col W G King, C.I.F., I.M.S., Madras. Babu Motilal Mehta, Khandesh. The Civil Surgeon, Hissar. The Secy. Royal Institute of Public Health. Capt. Duer, I.M.S., Bangalore. Capt C G Barry, I.M.S., London. Dr C A. Bentley, Tezpur. Major C H Bedford, I.M.S., Calcutta. Capt. E. R. Newman, I.M.S., Bhagalpore. Major Adie, I.M.S., Ferozepore. Capt. Foulkes, I.M.S., Capt J H Hugo, D.D., R.M., Nepal.

Original Articles

NOTE ON SERUM REACTIONS AND THE TEMPERATURE CURVE IN CHRONIC MALARIA INCLUDING KALA-AZAR

By LEONARD ROGERS, M.D., M.R.C.P.,

CAPTAIN, I.N.S.,

Offg Professor of Pathology, Medical College, Calcutta

BEFORE the days of the malarial parasite and serum reactions, no one seems to have doubted the truly malarious nature of the class of cases known under the term "malarial cachexia," a condition occurring in such numbers in very malarious parts of India, Algeria and elsewhere as a direct sequel of repeated attacks of fever indistinguishable clinically from malaria. Recently, owing to the difficulty in finding parasites in this last stage of the disease and the failure of quinine to influence some advanced cases of this cachexial condition, doubt has been thrown in some quarters on their malarial nature. For months past I have been studying this question as part of a comprehensive investigation of all long continued fevers met with in the unrivalled material in the Calcutta hospitals, and hope shortly to be able to find time to work out and formulate my conclusions. In the present communication I only propose to deal with the serum reactions and temperature curves, as this point has been raised in the September issue of this journal. I have carried out a number of serum tests for both typhoid and Malta fevers, in cases of chronic malarial fevers during the last two years with such uniformly negative results that it is unnecessary to enter into details regarding them except to mention that the absolutely reliable microscopic method with a time limit of one hour with living cultures was always used. The bacteriological and blood examinations of these cases I must reserve for a future communication, but I may say that they are similar to those I have previously described in both chronic malaria of districts of Assam, which were free from *kala-azar*, and, in the last named disease, only I have extended my observations in some directions. Dr Bentley's highly ingenious hypothesis that this last disease is nothing but a severe type of "epidemic Malta fever" introduced into India by troops from the Crimea at present rests solely on the serum tests recorded in his paper in the last issue, a piece of evidence, which, fortunately, it is possible to submit to rigid examination. I would, however, suggest that Dr Bentley's theory would obtain strong support if he could unearth some records of a similar "epidemic Malta fever" in the neighbourhood of the English hospitals where the immense

majority of troops returning from the Crimea were accommodated. I fear, however, it will puzzle even Dr Bentley to explain how the Buidwan epidemic fever can have originated from Malta fever introduced by European troops at the time of the Mutiny, as he suggests, considering that the "fever was very fatal in the Jessore district in the years 1847-48," *vide* Bengal Census Report of 1881. Dr Bentley has omitted to state in his paper that he first sent me the blood of some *kala-azar* cases to test for Malta fever, in none of which was I able to obtain a positive result even in dilutions of 1 in 10. In sending the bloods he stated they were from fever cases which resembled closely undulant or Malta fever, suppressing the fact that they were *kala-azar* cases, doubtless, so that I might be quite unprejudiced in carrying out the tests. The question, then, resolves itself into one of which series of tests is correct, for purposes of judging which it is necessary to know exactly how each were carried out, a point on which no information is vouchsafed in Dr Bentley's paper. The very low dilutions with which he records reactions, as compared with those in dilutions of from 1 in 150 to 1 in 1,000 uniformly obtained in the cases of Malta fever on which Professor Wright's and Captain Smith's original communication on the subject (*British Medical Journal*, March 16th, 1897) were based, at once strikes one. Further, no explanation is offered of the negative results in nearly one quarter (6 out of 25) even in the extremely low dilution of 1 in 10, or of the absence of complete reactions in more than half the cases (13 out of 25) in the low dilutions of 1 in 40, although reactions can be obtained from the fifth day up to thirteen months after the onset of Malta fever.

In view of the absence of details of Dr Bentley's reactions, and the very inconstant and inconclusive nature of the reactions obtained, I have recently repeated my tests on a series of nine more *kala-azar* cases, the bloods of which were kindly sent me by Dr Dodds Price of the Nowgong district, than whom no living medical man has had such a close and prolonged acquaintance with the disease. As in the case with my former tests on Dr Bentley's *kala-azar* cases, the indisputably accurate microscopical method with a time limit of one hour was used. As I have been credibly informed that the method commonly adopted at the Kasauli Institute is the use of sedimentation tubes, I also put up a control series in these tubes in the same dilutions as in Dr Bentley's series. The results were highly instructive, for typical precipitates at the end of 24 hours were obtained in the sedimentation tubes in very similar proportion and degree to those reported from Kasauli. Yet by the microscope test, complete clumping was not obtained in a single case, even in dilu-

tions of 1 in 10, at the end of one hour, although Aldridge states that true Malta fever serums clump the micrococcus *melitensis* "immediately" in this dilution. Further, the precipitates in the sedimentation tubes were examined microscopically after from 24 to 72 hours, and even then many of the micrococci were found to be still active and not clumped. In one of these bloods red corpuscles were present in some numbers, and in two others a few were found, but in the remaining six cases none were present, which could not account in any way for the precipitates. I noticed, however, that most of the serums were more or less stained with hæmoglobin, this being nearly inevitable with bloods which have been sent several days' journey. I therefore tested some similar bloods from cases of cholera, cerebrospinal fever and dysentery, and got similar precipitates with the Malta fever coccus in low dilutions in sedimentation tubes, although the cocci were still active under the microscope. It is clear, therefore, that in bloods which have travelled for several days the sedimentation tests alone are not reliable, so that apart from the question, whether the inconstant reaction in the low dilutions recorded by Dr Bentley are any evidence at all of Malta fever, it is clearly necessary to know by what method they were obtained, before any value whatever can be assigned to them, especially in view of my negative results by the accurate microscopical method in two series of *kala-azar* cases from two different districts of Assam, including those sent by Dr Bentley himself. The only conceivable source of fallacy in my results is the bare possibility of my cultures being wrong, but this can safely be discounted, as in my last series of cases I used two different cultures in each case, one derived from a reliable European source and the other very kindly supplied to me by Major Semple himself from the Kasauli laboratory. It would not be very surprising if Malta fever is found to occur in Assam, as in other parts of India, but the low serum reactions recorded by Dr Bentley do not conclusively prove even that much.

Since writing the above I have heard from Major Semple that he controls the sedimentation test by microscoping a portion of the mixture for clumping. This narrows the question of the value of Dr Bentley's reactions down to one of whether reaction in such low dilutions at 1-10 and 1-40 are reliable evidence of Malta fever. The opinions of medical men who have watched cases in which such reactions have been obtained as to whether they presented the clinical picture of Malta fever or not, will be of great value here. My own experience, is that reactions in dilutions of 1 in 10 with Malta fever organism, may occasionally be obtained in cases which present no clinical evidence of Malta fever, and I come to regard such reactions as of no diagnostic value whatever. I should also add that Major

Semple only looks on his reactions as evidence that Malta fever does occur in Assam, as in other parts of India, and not as in any way proving that *kala-azar* is Malta fever.

In view of the negative serum reactions recorded above in *kala-azar* it would be a waste of space to criticise in detail Dr Bentley's arguments. One crucial point may, however, be briefly considered with advantage, namely, the temperature curves in relationship to the death-rates in Malta fever and *kala-azar* respectively. All specific fevers have more or less definite temperature curves and course, so that if these two diseases are one and the same, these should be similar, except in so far that as *kala-azar* is many times as fatal as Malta fever, its course should, in the great majority of cases, resemble the malignant type of Malta fever, only be infinitely more malignant than the latter ever is in Europe. Let us see how far this is the case.

Taking Hughes' detailed account of the Malta fever temperature curve we find that he divides his cases into three classes, namely, the malignant, undulant and intermittent type. The first, which alone is at all commonly fatal, presents a severely remittent type throughout, death occurring in 5 to 21 days in fatal cases. *Kala-azar* being so many times more fatal than Malta fever should usually occur in this form if the two diseases are the same, yet such a type of the disease is absolutely unknown to me either in my years' continual investigation of the affection in Assam or in the literature of the disease. The second or "undulant" type comprise the majority of Hughes' cases, being characterised by a series of waves of remittent fever, averaging ten days in duration and three in number, with very short intervals of little or no fever between them, averaging three to four days and ending abruptly "with a subnormal temperature lasting from one to six or more days with a clean tongue," this being "one of the surest signs of permanent cessation of the pyrexia." Further he states that "when, however, the patient is completely free from the disease, it does not, like paludism, recur," except for mild pyrexia accompanying the common complications of effusion into the joints and swollen testicle, complications which I never once met with in *kala-azar*, although the first-mentioned occurs in no less than 40 per cent of Malta fever cases, forming one of the most characteristic features of that disease. I have just re-examined a series of my original temperature charts of *kala-azar* cases, with the result that I could not find a single one at all comparable with the malignant type of Malta fever, and only one which at all resembled the common undulant type, these being the two types which may be fatal in the case of Malta fever. Lastly, with regard to the very mild and scarcely ever fatal intermittent type of Malta fever, I have found five charts in which the apyrexial intervals were sufficiently short to allow of their present-

ing some resemblance to the intermittent type of Malta fever, but four of these died, and the other was lost sight of when in a desperate condition. Of the remaining twenty three cases the intervals between the irregularly recurring intermittent fever were far longer than occurs except very rarely in Malta fever, so that if they were cases of that disease the type of fever was far milder than is seen in Europe in this non-fatal form of the disease. Yet only two of them recovered, the rest proving fatal. We arrive, then, at the reductio ad absurdum that the manifold more fatal kala-azar yet presents, as a general rule a far milder type of fever curve than the mildest non-fatal form of Malta fever. Again, we have seen that once the temperature has remained normal for some days Malta fever does not recur. On the contrary, the inveterate tendency of kala-azar, as of all chronic malarial fevers, is to relapse again and again with frequent and often considerable intervals of apyrexia, sometimes lasting for several months in the cold weather. In my original report I wrote "Thus there is no definite type of fever in the disease, while its duration, and that of the intervals between the attacks, differ widely, the only constant characteristic being the inveterate tendency to recur again and again until a fatal issue results." The types of the temperature curves of the two diseases then agree only in the single point that both may run a very prolonged course, although even this is rare in fatal cases of Malta fever as it is common in kala-azar, which leads me on to the last point which appears worthy of discussion, namely, the death-rate and the duration of fatal cases. In my report I gave the death-rate of 200 consecutive cases of kala-azar on Nowgong tea gardens, which had been diagnosed and treated throughout by no less an experienced practitioner than Dr Dodds Price, as 96 per cent. This rate was subsequently reduced to a little over 50 per cent, mainly on account of more vigorous and sustained anti-malarial treatment than before, to prevent the retrogression from which beneficial result is the main object of the present communication. Now the death-rate of Malta fever is given by Hughes as about 2 per cent, while 60 per cent of the fatal cases terminated within one month, and 84.44 per cent within two months, of the onset of the fever. Kala-azar being from 25 to 48 times as fatal as Malta fever, it should show a very much greater proportion of rapidly fatal cases if the two diseases are the same. Yet in my report I recorded the fact that the average duration from the first admission for fever to the date of death taken from 193 cases on a Nowgong tea garden was 7.4 months, the extremes being two months to three years, while the usual duration was from 4 to 9 months. These facts (not to mention many others such as the absence of joint and testicle sequelæ and the darkening of the skin, which is so characteristic

a feature as to give the disease its name) taken with the extremely high death-rate and the totally different temperature curves are amply sufficient to prove the two diseases to be entirely distinct. It was, indeed, these essential differences between kala-azar and Malta fever, which made me consider it unnecessary to even discuss the possibility of their identity in my comprehensive report on the former affection. If kala-azar can be proved to be Malta fever, then the clinical history of the latter will have to be entirely rewritten. In the meantime the negative serum reactions obtained by me with the absolutely reliable microscopical method in two series of cases of kala-azar, the marked reduction in the mortality of the disease by steady anti-malarial treatment in the hands of Dr Dodds Price, and the complete success of the segregation measures that Dr Price carried out at my suggestion, with the result that his new lines with some 450 coolies have remained entirely free from the disease for five years, justify me in maintaining my original position that kala-azar is an epidemic malarial fever, supported as it is by no less an authority on malaria than Major Ronald Ross after an independent investigation in Assam.

NOTE ON KALA-AZAR

By J. DODDS PRICE, M.R.C.S. (ENG.), L.R.C.P. (LOND),
District Medical Officer, Nowgong, Assam

My attention has been drawn to an article by Dr Charles Bentley, which appeared in the September number of this *Gazette*, on some recent discoveries he has made as to the true nature of kala-azar.

Having examined and treated nearly 2,000 cases of the disease, and having been brought into almost daily contact with kala-azar for nearly nine years, may I be permitted to state my belief that the disease is of malarial origin and to give my reasons for this opinion.

I am anxious to do this, as I feel that a great deal of harm may be done by Dr Bentley's paper if his theory is accepted out of hand, and the anti-malarial treatment of kala-azar dropped without further enquiry.

I must also confess to considerable surprise at one or two statements made by Dr Bentley, and I cannot help thinking that he has allowed himself to be too easily influenced by the results of Major Semple's blood examinations. While visiting this district in April last, Dr Bentley certainly found malarial parasites in the blood of every case of kala-azar. I shewed him, and similar parasites were present in the blood of all the cases of kala-azar we examined together in Tezpur a month later. In addition, Dr Bentley shewed me a number

of cases which he had been treating with large doses of quinine, and which he considered had benefited greatly in consequence. His results at that time agreed with mine and confirmed me more than ever in the malarial origin of *kala-azar* and the great value of quinine.

Rogers found malarial parasites in every case of *kala-azar* in the early stages, and also in the later stages of cases he was able to examine repeatedly, and Ross found them in the great majority of early cases. Why, therefore, it should appear strange to Dr. Bentley that these investigators should have omitted to discuss the possibility of the disease being analogous to Malta fever, I fail to understand. In favour of the malarial origin of *kala-azar*, I would mention that it has always been my practice to clear out of an infected line all cases of the disease and to place them in a camp some considerable distance from all contact with the outer coolie world. This, of course, necessitates the employment of a separate establishment of hotel cooks, panwallahs and sweepers, who are attached to the camp, and at one time I frequently noticed that a number of these attendants sickened with, and even died of, *kala-azar*, among the number being three hospital assistants one of whom I lost. A rule was therefore made that every person who was brought into contact with the infected coolies should be given ten grains of quinine twice a week, and since this plan was adopted I have only had one case of *kala-azar* among the camp attendants. This case was the native compounder in charge of the camp, and he made an excellent recovery under quinine, his illness lasting four months. Now, I take it that if *kala-azar* is not of malarial origin, quinine would not be of much use as a prophylactic, and one is almost inclined to believe from the number of drugs Dr. Bentley has employed in the treatment of the disease, that he has not been sufficiently persevering in the use of quinine.

Most writers on Malta fever lay considerable stress on the fleeting joint affections met with in a large proportion of cases, and Dr. Bentley mentions joint pains in his clinical picture of *kala-azar*. I can only say in this connection that his experience does not agree with mine, for I do not remember ever having seen affections of the joints in a case of the disease.

In conclusion, I would like to add, that while in quinine we have a most valuable drug in the treatment of *kala-azar*, segregation of the sick is of the utmost importance, and where coolie lines are badly infected they must be abandoned at all cost. In this district where these tactics have been adopted, the results have been gratifying in the extreme, but the greatest care has been taken to allow none but healthy coolies and their families into the new lines.

A NOTE ON DENGUE FEVER

By W. G. FRIDMORE,

Captain, I.M.S.,

Civil Surgeon, Bhamo

THE Burmans appear to be familiar with the disease and call it "*Toke Kwe Ana*," "*a disease which ties one together as the hands and feet, or as the ends of a bow are drawn together*." They have a legend that it visits the country every thirty years.

The epidemic arrived in Bhamo in June last, having travelled up the Irrawaddy Valley starting in Rangoon in May and visiting Mandalay during the early part of June. It is interesting to note this following of the important trade route. It is not unlikely that the epidemic originated from the Hongkong epidemic, of which Dr. Stedman writes in the *British Medical Journal* of July 12th, 1902.

Etiology—I regret that I have been unable to experiment with mosquitos. Dr. Graham's experiments are interesting, but far from conclusive. The extreme infectiousness of the disease and rapidity with which it spreads, are against the mosquito theory. The mosquito was certainly not answerable for the following case, the second that came under my notice.

The first that I attended, probably the first that occurred in Bhamo, arrived on June 19th from Mandalay. He was a European and was quartered over a mile distant from my quarters. My little daughter, a child of three, who had not been exposed directly to the disease, sickened on June 28th and went through a typical attack of dengue. The infection in this instance must have been carried by myself. I had heard of no other case in the town. It is not wise to over-burden the mosquito, but if, by planting a few other diseases on him, we can dispel the apathy that exists, and stimulate authorities to exterminate the pests, a blessing will be conferred.

I have diligently searched for Graham's parasite in the blood of half a dozen of my dengue patients, using unstained films, with a negative result.

Incubation—Three days has been the average incubation period in the Bhamo cases. My third case (my wife) developed symptoms three days after the second case, whom she nursed, was well. It is difficult to judge how long a case remains infectious. In this instance the incubation could not have been less than three days. Four days after my wife's (the third case) attack began, I myself was attacked.

Symptoms—Excepting natives with very dark skins the secondary rash invariably appeared on the fifth or sixth day. With a very dark skin it is easily missed.

Adenitis, a symptom which Dr. Stedman in his account of the Hongkong epidemic does not

mention, and which text-books mention as a complication, or sequela, has been fairly constant in the Bhamo cases. In at least 75% enlargement and tenderness of the cervical, axillary, inguinal and supra-condylar lymphatic glands have accompanied or preceded the second rash. It would be interesting to know the experience of others in this respect.

FURTHER NOTE ON INTESTINAL SAND

By C. H. BEDFORD, D.Sc., M.D.,

MAJOR, I.M.S.,

Chemical Examiner to Government, Bengal

SINCE the publication of my previous note on the subject, Major D. M. Mon, I.M.S., has very kindly afforded me the opportunity of examining a sample of intestinal sand which was given to him in 1892 by Dr. Buch, formerly Principal of the Calcutta Medical College. Dr. Mon was unable to give me any clinical facts in connection with the case, as he had not himself seen the case which was under Dr. Buch's care.

The quantity of sand placed at my disposal amounted only to a very few grains, and hence it was impossible to subject the specimen to a full quantitative and spectroscopic examination, as there was only enough for microscopical examination and the determination of the proportions of organic and inorganic constituents.

The result of analysis was as follows—

Moisture	..	3.94	per cent
Inorganic matter		7.62	" "
Organic matter		88.44	" "

The amount of inorganic matter present in this specimen accords more closely with what has already been observed in samples of so-called "false" intestinal sand. In my previous paper I mentioned the fact that generally 2 to 3 per cent of inorganic constituents had been found in specimens of "false" sand.

The microscopic examination of this sample, taken along with the action of various reagents on the specimen when under the microscope, gave identical results with those obtained with the specimen described in my previous note.

I am, therefore, inclined to regard this specimen as one of "true" intestinal sand containing an unusually small proportion of inorganic constituents.

In conclusion, I take this opportunity of again thanking Major Mon for his kindness in sending me this specimen for analysis. Its examination—incomplete as it necessarily was—points to the difficulty of differentiating specimens of "true" and "false" intestinal sand by means of their relative proportions of inorganic constituents, and further seems to show that the proportion of inorganic matter may be much lower than has been hitherto supposed in specimens of "true" intestinal sand.

SIX CASES OF MELANCHOLIC STUPOR

By L. F. W. EWENS,

CAPTAIN, I.M.S.,

Superintendent, Punjab Lunatic Asylum, Lahore

I GIVE a summary of six cases of melancholic stupor or melancholia attonita or psychocoma as it is sometimes called that have occurred in this asylum during the past two years, not that there is anything new in them but that some of the cases are very typical of their kind, and all present such a distinctly marked clinical variety of insanity as to be well worthy of particular notice. (1) The first case is that of an unknown male admitted on 17th April 1901, apparently about 30. This man was arrested by the police, having been found wandering about cantonments, silently breaking flower-pots and window panes, nothing was known of him or could be discovered, while under observation he quickly passed into a condition in which he was stated to have lain continually on his back with the eyes closed quite motionless except for some twitching of the facial muscles, he never spoke, asked for nothing, and only eat food actually placed in his hands, and latterly certainly passed all his excreta where he lay. These were all the facts received with him on his admission. From that time and up to the present day (with an exception of a few days in May 1901 when he only differed by eating a little of his own accord) this man has never altered in one single particular. Though not deformed, not paralysed, with no sign of physical disease, he lies and has lain ever since on his side half-coiled up, absolutely motionless, never speaking, never moving, paying absolutely no attention to anything, flinching perhaps a little at some painful stimulus, but giving no other reaction. He is of a peculiarly yellow sallow complexion, and the mucous membranes are slightly anæmic, the eyes are tightly shut, and there is a distinct sense of resistance when they are forcibly opened, just as there is to any movement of the limbs or body, so that if it is desired to move him he has to be dragged or carried, the urine and excreta are passed under him, and he pays no attention to their presence, nor does he to the prolonged absence of food, which, however, he swallows when placed in his mouth. The reflexes are all normal, and his general bodily development as a result of regular forcible feeding still retains a good condition, and except for the complexion and colour and a certain amount of coldness and blueness of the hands and feet and the fixation of the face muscles in an expression of profound dejection there is nothing else noteworthy.

It is obvious that his position and quietude are voluntary, for he gives a distinct passive

resistance to anything done for him and it is just as obvious that he feels. I have several times removed the blankets from his shoulders when a cold wind has been blowing and seen him without a word, the next moment slowly raise his free hand, replace the covering and again become motionless, and if he is placed sitting up or leant against a wall, he slowly and silently regains his former position, but no noise, command, shout or any cutaneous stimulus, however painful, will cause him to open his eyes or give any voluntary proof of having perceived them or will induce him to speak.

(2) The next case was that of K——, a Pathan. This man when quite sane shot his wife with a pistol and was in consequence tried by a *jurah* who found that death was accidental, that the prisoner was handling the pistol when it suddenly exploded, the bullet striking his wife and killing her on the spot. He was then prosecuted for keeping a revolver without a license and sentenced on 19th February 1901, to six months' rigorous imprisonment. It was stated that at the commencement of this prosecution the man began to be morose and "stupid," though he had been perfectly natural before, and that he remained morose, heavy and silent from the time of his entry of the jail, refusing to answer questions, and rapidly passing to the condition noted on his admission to the asylum on the 16th July 1900. No family history of insanity was obtainable.

When first seen here he was noted as a well-made muscular young man of about 25, having a peculiarly depressed melancholic appearance and a sallow unhealthy complexion. Beyond a tendency to flat feet and a marked depression at the root of the nose, he presented no deformity or bodily peculiarity. There was no paralysis of any muscle, and the reflexes were all normal on reaction. He stands or sits or lies perfectly motionless and silent in any position in which he is placed, at first he occasionally answered in a whisper when loudly spoken to, but later on absolutely refused to speak, and only occasionally slowly raised the eyes at some loud order. Generally he would stand absolutely motionless and silent, the head bent, the eyes fixed on the ground, with a gummy exudation filling both conjunctival sacs, the forehead deeply wrinkled transversely and the features presenting a picture of absolute misery. He was to a certain extent cataleptic, the head if placed in any position would remain there, the hand could be placed in one posture and would there remain for an indefinite period, but at the same time it was only with the greatest difficulty he could be moved from one place to the other as he passively and silently resisted, so that when pushed along his limbs had the appearance as though of lead being slowly dragged though at other times he would move slowly aside to pass urine and faeces, and in this respect differed

from most of these cases. Practically during the whole time he asked for nothing, paid no attention to anything or anybody, and beyond occasional movements of the eyes showed not the slightest reaction to any form of stimulus, and would only eat food when this was actually placed in his mouth.

The skin was always warm, neither dry nor moist, but the mucous membranes were anemic, the teeth were irregular and filthy, the tongue moist, white and furred, a view of it being only obtained with the greatest difficulty as he kept the teeth clenched and silently resisted any effort to open them.

There were no physical signs of disease in the thorax or abdomen. He was forcibly fed regularly, was kept warm and protected, but his condition never altered, and on the 20th August of the same year, when handed over to his relatives who came to take him away, he was exactly the same, and the last I saw of him was a silent, motionless, huddled-up heap which they were preparing to lift up and carry away.

(3) The third case is that of another unknown male found wandering in Bannu, and of whose antecedents therefore nothing is known, he was admitted here on 16th May 1901. From that day to this, during the whole of the eleven months this man's condition has never varied, nor has he ever moved or spoken. He is a medium-sized, wretched-looking man of about 30 with an expression of intense misery, who stands, sits or lies wherever he is placed with eyes shut, the head usually bent, never speaking or moving, paying not the slightest attention to any form of cutaneous stimulation or to anything going on around him, asking or signing for nothing, and only eating when food is actually placed in his mouth (sometimes, however, he will do so if food is placed in his hand and then raised to his mouth). He passes urine and faeces under him just as he sits, and though it is obvious that he feels, never shows any discomfort from that condition. The eyes are usually shut and have a certain amount of secretion at the edges of the lids, the general body surface is warm, though the feet are a trifle cold and blue. The reflexes are normal, nor is there any evidence of paralysis or indeed any physical signs of disease. He has remained as described, generally sitting with the head bent forward, the eyes shut, the legs under the thigh, the hands dropped to the sides, often leaning against the wall, always with the same expression of deep misery up to the date of writing, though by regular forcible feeding he is slightly fatter and better nourished than on admission.

(4) This fourth case though varying from the others is, in my opinion, worthy of description as showing a difference in degree only from those already noted, and also as showing the mode of development of such cases, and the difficulty as distinguishing them from malingering.

A H, aged 35, admitted 21st July 1900

This man was a mohamm in Government service from which he was dismissed for always quarrelling with the others, he was at that time commonly regarded as a lunatic and notoriously filthy in his habits, he was previously sentenced in 1895 under section 326 and he was confined under sections 466 and 471, C P C, in consequence of having murdered a little girl by hitting her with a *mohls* immediately after, and as he states in revenge for her mother having abused him. He is said to have been insane for eight years, his mental condition having been supposed due to "hereditary taint aggravated by masturbation"

On admission he was described as a thickset, short man, who always maintained a curious attitude, standing with hands clenched and arms semi flexed, head bent and both eyeballs slightly deflected to the right—only very rarely looking one in the face. There was, however, no spasms or paralysis, and the man had perfect movements of all his muscles. The countenance had a fixed grinning smile, the skin was hot and sweating, natural in colour, the mucous membrane not anæmic, the teeth white and perfect, while the tongue could not be seen, for like the preceding case this man "resists everything required of him but in a more active manner. If asked to move he sits down, if to stand the same. To move him it was necessary to drag him along, he obviously understands everything said to him, but beyond some very occasional wailing reference to 'zulum' he will not speak and never answers. He takes off all clothes he is dressed in and is very filthy, passing urine and feces under him where he sits, he will eat only when food is placed in his hands, but otherwise never asks for anything, and in general never moves or speaks nor can anything or anybody arouse him"

For months he remained coiled up in his cell motionless, silent and filthy, latterly becoming still more resistive, so that when raised he stiffened all his muscles, and would be raised maintaining exactly the same position as on the ground. He gradually began however to give occasional wailing utterances, then to ask for food, and on the 20th September suddenly began to speak, giving a long and coherent statement of his having been "unjustly" imprisoned, and that the grief of this had affected his mind. He still, however, kept the limbs rigid and resisted any forced movement, and though up to December he improved a little in that respect, he then again became rigid, silent and motionless, he still, however, would then feed himself, but would not do that when requested, but would first keep the food by him for hours. With occasional remissions since then he has gradually improved, and is now in a condition of ordinary simple melancholia, but is still obstinate and will not occupy

himself in any way. He professes to have a perfect memory of everything since admission.

(5) The fifth case presents an example of a modified form of stupor occasionally seen. It is that of an unknown male of about 25 who was found wandering in Umballa, in March 1900. No other information is forthcoming, but that he was sent for observation into jail, and his condition not improving, he was finally transferred to the asylum on 1st August 1900.

On admission to the asylum, he was noted as a small under-sized young man of poor physique, flat-chested, with a conical-shaped head, flattened laterally, but who presented no paralysis or deformity, the mucous membranes were anæmic, the complexion a pale yellow, and the skin, though natural in temperature, damp and greasy. He sits or stands in one position, absolutely silently, speaking to no one and doing nothing, paying no attention to his evacuations, passing everything under him, he would ask for nothing, but would eat what food was given him. He can obviously understand and generally obeys any simple order, but nothing will induce him to speak, nor does he attempt to carry on a conversation by signs, he does not cry, or sing, or make any noise, but remains the whole day absolutely silent in a curiously fixed attitude as though staring at something with an expression denoting the greatest misery and dejection, occasionally turning the head and eyes when addressed loudly. There were no physical signs of disease on admission, though chronic diarrhoea commenced shortly after.

During the whole of 1900 he remained in this state never speaking, occasionally however at intervals, replying by signs, remaining the whole day and night in one place and in one attitude, filthy in his habits and impossible to advise in any way. He was, however, not resistant and could be moved and attended to without trouble. In December he suddenly one day began to speak a little but unintelligibly, and very soon relapsed into his old condition though somewhat less dejected in appearance. His general health then began to fail, and he died somewhat later of chronic diarrhoea.

(6) The sixth case is one presenting a less degree of stupor than is usually seen in the disease, it is that of—

Q, aged 35, who was admitted to the asylum on the 3rd July 1900. This man having murdered his own mother was confined in jail under section 471 of C P C on 29th July 1897. There are no records of the circumstances under which he was deemed insane at that time, but during his confinement it is several times noted that beyond giving evasive replies his behaviour was quite natural. Towards the end of 1898, however, he developed a condition of melancholic stupor with occasional alternations of excitement, during the stupor his limbs a.

noted as presenting the condition of "flexibilitas cerea." Since February 1899, he has been almost uniformly in a state of stupor, silent except on rare occasions when he would ask for food or make some trifling complaint, and in that condition he was transferred here. He was then noted as a man of average height, of an unhealthy yellow complexion and clammy greasy skin without any paralysis or deformity, who spent the entire day sitting cross-legged on the ground in one fixed attitude, absolutely motionless and silent, the head a little bent forward, the eyes half open and full of glaucous mucus, the lower lip so pendulous as to leave a cavity between it and the teeth which is always full of saliva. He would pay no attention to anything or to anybody and only, by vigorous efforts and loud speaking, could sometimes be made to answer, when he did so in a low faltering voice generally sensibly. No delusion could be discovered. He was, however, clean in his habits as he would voluntarily rise and go to the latrine.

Sometimes he would take food offered to him, but more often he passively refused to eat and required forcible feeding.

He showed a certain amount of catalepsy, that is to say, that one hand and arm, if raised, retained that position until the other was raised when the first was slowly lowered.

He was fed regularly with a nasal tube whenever he refused food, was walked up and down the enclosure forcibly, was kept warmly clothed and protected, but his condition scarcely altered. One day he partially awoke and talked freely, but the next he again settled down to his previous condition. Signs of tuberculous disease of the lungs began to appear, he emaciated rapidly and died of the disease on the 13th December of the same year.

It will be seen that all these cases present a condition in the main absolutely identical. As far as can be observed, they sleep though always in the same attitude, but with this exception during the whole time often extending to many months the condition of a man with this affection or even his attitude never varies. Each sits or lies always in the same posture, coiled up, motionless and silent, the eyelids generally tightly closed, and usually showing some secretion at the edges frequently with an excess of nasal mucus—the man never moving, speaking, or paying the slightest attention to anything going on around. The greatest noise or excitement, a push, a blow, an injury, the demands of nature all fail to arouse him, he passes everything under him, never asks for or searches for food, and though he will usually swallow when this is placed in his mouth he would otherwise, even with ample nourishment placed in front of him, lie there regardless of it as far as can be seen, until he died of starvation. Nor is there under any circumstances any manifestation of emotion. Each, though obviously

well able to feel and with all the cutaneous and deep reflexes in perfectly normal condition, seems otherwise insensitive to any stimulus of any nature and of any sense. One and all vary from a condition of passive to obstinate resistance to all endeavours to move or arouse them, each having to be dragged or carried to any place to which it is desired to move them, indeed the resistant condition and the expression of deep misery is to my mind typical of their malady.

What then is the exact condition in these cases? The patient can feel his reflexes are present, the sphincters act normally, each can swallow and is certainly not paralysed, so that there is little doubt as to the condition not being involuntary. It is almost certain that the state is one resulting from intense volitional exertion, inhibiting all the usual movements that respond in normal people to external or internal stimuli, and the only reasonable supposition is that a still stronger efferent impulse is continually working that excites the control and overpowers the normal impulses that fail so signally.

Most of these cases in which a clear history can be obtained show that they result from an antecedent condition of melancholia which rapidly increases the patient from merely being depressed, becoming more intensely so then becoming more morose, gloomy and taciturn, until this culminates in the state of absolute silent immobility and non-reaction to all impressions that we see in this disease.

These clinical facts agree with the theory advanced that these cases are varieties of melancholia, that they result from an overpowering sense of dread or, as some assert, from a delusion, in accordance with which the patients voluntarily maintain the condition described.

All the patients that I have seen on recovery (and these cases frequently recover, indeed generally, when they do not die of some intercurrent disease such as tubercle or diarrhoea) maintain that they had perfect consciousness and memory during the time of their immobility, and often assert that they were compelled to act as they did in consequence of some great dread or great depression and sense of misery or some powerful "feeling" which they could not help but obey.

It is asserted (Clouston, *Mental Disease*) that in these cases the "power of receiving, impressions, from without is in abeyance" and that the "higher reflex functions" of the brain "are suspended," but I would submit that there is no evidence of this but that rather that the stimuli, the impressions on the senses, which produce no effect, fail to do so not because they are unfelt, but because the reaction they normally excite is inhibited. A careful repeated examination of these cases gives one the strong impression that there is not the slightest defect in their transmission just as one is

easily satisfied that the skin and other reflexes are unaltered. Certainly on recovery the patients usually profess to have been conscious of all the efforts to arouse them.

It will be noticed that, so long as the patients are regularly and forcibly fed, with sufficient quantities of nourishing food, the general health is often well maintained, and indeed the body weight may be seen to rise.

The only general defect that may be intervened is a certain amount of coldness and blueness of the extremities which look a little blue. The general body surface, unless allowed to remain exposed, retains its usual temperature, bedsores do not form nor do any trophic changes take place.

Most of the patients suffering from the disease are young indeed. You will never see one of over middle age, and Dr. Clouston lays particular stress on the fact of the malady occurring always in the actively reproductive period of life, but the absolute inability to obtain any "previous history" which is such a marked feature in this country, renders it impossible to say whether in these patients at any rate the commencement of disease had any connection with sexual excitation. When any history at all is forthcoming, it is on the contrary one of rapidly deepening melancholia, for the onset of which no explanation is available. Some of the cases present a certain amount of catalepsy, but this is so variable and changeable that it does not suffice to make a variety of the disease. It has, however, been attempted to separate a form of "aneuric stupor" in which the patient, outwardly the same in appearance, is quite passive, unresistive and with absolute loss of consciousness and memory often accompanied by vasomotor and trophic lesions. Such cases are seen, and though sometimes described as occasionally passing over into the more typical forms, there is little doubt belong to these rare cases of "acute dementia," a condition of functional, temporary or permanent arrest of volition and intelligence, an arrest of brain function quite different from melancholic stupor in which obstinate resistance with retention of memory and consciousness are marked and indeed essential features. In acute dementia there are, too, altered reflexes, there is much more loss of facial expression, and there is an abolition of emotional, intellectual and volitional operations through functional arrest or destruction of the cerebral mechanism by which they are normally rendered evident as opposed to the inhibition of these manifestations seen in cases of true melancholic stupor. The two diseases are quite distinct and indeed radically opposed. It must, however, be remembered that the insane present a wide gradation in states of stupor, beginning at cases of mild 'melancholic' apathy and ending in those here discussed, and that it is necessary to distinguish them from the

modified forms of stupor seen in those cases of the secondary, transitory stupor after acute mental disease (to my mind most resembling modified dementia), a form which all are liable to be followed by, and in which, for a short period, the patients are confused, inattentive, lethargic and torpid, and present an abeyance of all the higher reasoning powers—a state of stupor from brain exhaustion often seen when the attack of acute mania, &c., has just passed off and precedent to recovery.

There are also conditions of flaccid "unconscious" stupor following attacks of convulsions or congestion in general paralysis and epilepsy sometimes indeed seen unaccompanied—usually these are associated with much brain atrophy. These attacks are, however, of short duration, and more of the nature of coma or of mental obnubilation resembling the mental confusion experienced by some people when half awake. A similar condition is sometimes seen in alcoholic insanity, and a mild form of stupor immobile, only differing in degree and duration from that of melancholia attonita, is also seen sometimes following great mental shock of sorrow, grief or joy—a condition that has obviously given origin to the common phrases "transixed in horror," "dumb with terror," "rigid," "petrified," &c., &c.

It can only be very slight and modified cases that require distinguishing from the conditions alluded to by Bevan Lewis as resulting in stupidity and torpor from obstruction of the nasal passages from adenoid growths, in which the patient becomes heavy and stupid, has a wandering gaze and stupid expression with the impeded respiration causing an open mouth often with dulled hearing.

It is, however, a disputed point whether conditions seen in hypnotism the somnambulistic and cataleptic states and the more profound conditions of mental lethargy are only differences in degree from mental stupor, certainly some of these are best explained by the theory of one dominant idea overpowering mental operations and inhibiting the operations of all others, but all hypnotic subjects, speaking broadly, are susceptible to "suggestion" and obey readily, commands given in that way—the exact opposite to cases of melancholic stupor in which the very reverse holds and is indeed an essential characteristic.

There is little doubt that many of the cases of trance, &c., so often found in literature, would, if examined, be found to usually consist of people suffering from this disease which, from its striking peculiarities, lends itself well to description and the sufferers from which must always have excited great interest. There are a large number of cases of the disease reported, but I am not aware of any one having succeeded in finding any characteristic appearances *post-mortem*, and I have certainly not been able to do so.

SOME CASES OF SUDDEN DEATH IN NATIVE REGIMENTS.

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It happens now and then that cases occur in Native Regimental Hospitals, which are not only difficult to diagnose and treat at the time, but afterwards afford much food for reflection.

During a period of over three years in the Punjab, it has fallen to my lot to meet some of these, and in placing them on record my object is to shew that the tendency to death is frequently what one might term "an accidental circumstance."

That an accidental circumstance is the essential feature in the termination of many complaints is exemplified day by day.

When a native is struck down by diseases more especially an acute one such as pneumonia, it is striking how little stamina or constitutional resistance to disease he possesses, whether or not the cause of this is to be sought for in the result of in-breeding, the effect of climate, the nature of his diet or general mode of life, is a doubtful point.

In this connection it is interesting to note and compare such cases as they occur amongst Europeans and natives of India. As a rule in Europeans it will be noted that it is only after a prolonged and severe course of illness that the termination is sudden, whilst amongst natives the unexpected as it were always happens, and cases which seemed to present no special features or signs indicating that death would be sudden are met with.

This is in part accounted for by the fact that a European almost always combats his disease, whereas most natives besides inheriting the above-noted attributes are born fatalists, discerning the course and termination of disease as a matter of *kismet*. My first introduction to a case of sudden death was the following—

Case (a)—Sepoy Dewa Singh, aged 29 years, service 11 years, had always been in good health, and on the morning of the day previous to his admission to hospital, viz., on 22nd December 1899, had been out field-firing.

After parade he complained of pain in the right arm, and at 4 A.M. next morning complained of general pain, and pain in the abdomen referred to the umbilicus.

At 6.30 A.M. he became unconscious, his temperature was 102°F, breathing shallow and noisy, but not exactly stertorous, no puffing of the buccinators, froth round the mouth, pupils dilated and fixed, pulse very feeble and rapid, the temperature continued to rise and alternately reached 109°F. Right arm rigid and flexed, left arm flexed, but not rigid, legs extended, not rigid, and did not seem paralysed. He died half an hour later.

Post-mortem 4½ hours after death.

Body still warm, left arm in a condition of rigor mortis. The scalp having been removed, no abnormal appearances of the dura were noticed, meninges normal, the brain showed no macroscopic evidences of disease, it appeared perfectly healthy, and there was no internal or external hæmorrhage, and no excess of fluid in the ventricles.

Lungs, perfectly normal, no emboli in the pulmonary vessels. Heart, small excess of fluid in pericardium, pericardium and heart normal and free from any trace of disease. Aorta and aortic valves healthy, living membrane unstained.

Liver appeared perfectly normal.

Kidney capsule stripped off easily.

Stomach, somewhat dilated, fæces in colon and sigmoid flexure.

Bladder, healthy and distended with urine. Spleen, enlarged, hard on cutting, no gross lesion noted, malarial pigmentation present.

Remarks—No definite opinion as to the nature of the disease nor the cause of death could be found in the above case.

Nothing could be deduced from the history or physical signs, whilst this coupled with the negative result of the *post-mortem* examination gives one little room to dogmatise on the nature of the case. Poisoning was at once rejected on account of the temperature and history, whilst there was no vomiting or purging, and the symptoms were totally unlike neurotic poisoning.

It was thought possible that some cerebral lesion either hæmorrhage into the internal capsule, pons or medulla, might be the cause, the probability being that it was situated in the pons the high temperature (109°F) favouring this view, the absence of motor symptoms if the rigidity of the right arm be excepted, negated the idea of hæmorrhage into the capsule. Sunstroke was out of the question, the weather being cold and the power of the sun insignificant. The spleen showed malarial changes, but the case resolves itself into one of two things (1) pernicious ague, or (2) cerebro-spinal fever. The former would cause the hyperpyrexia and perhaps the nervous symptoms which may have been due to microscopic emboli of malarial pigment in the capillaries. On the other hand, all the symptoms noted may have been due to a very rapid cerebro-spinal meningitis in which case the *post-mortem* would reveal scarcely anything.

Case (b)—Havildar Sham Singh, pensioner, aged 44, was admitted to hospital with chronic bronchitis. He stated that whilst on recruiting duty he had caught a chill, and for the last few days had been subject to a severe cough. Though somewhat thin and debilitated, there was no shortness of breath, no œdema or other evidence of heart failure. Rhonchi and râles were present all over both lungs, and the gums were swollen and puffy.

Shortly after admission his voice became husky, and he could only speak a little above a whisper there was some dyspnoea evidently due to some obstruction of the respiratory passage.

On laryngoscopic examination the epiglottis was seen to be swollen and the ary-epiglottic folds were thickened, the usual treatment for laryngitis was pursued with some apparent benefit.

Up till this time the patient seemed to be progressing favourably, till one morning whilst I was at another hospital a messenger called me to see him as he had suddenly become blanched and was breathing with difficulty.

Cycling back as quickly as possible, I found him lying unconscious, respirations short and shallow, whilst the pulse was almost imperceptible, the body was covered with a cold sweat and the pupils were dilated. I injected ether hypodermically and with a sharp scalpel performed tracheotomy. Artificial respiration was also resorted to, this treatment, however, was unavailing, and the patient died during the procedure.

No *post mortem* was allowed. *Remarks* — This man evidently died as the result of some obstruction to respiration, in all probability a sudden cedema glottidis, and when it is taken into account that the respiratory centre was for some time previous being supplied with imperfectly oxygenated blood, then there was less hope of its performing its function and evidently its condition was such that it could not tide the patient over the suddenness of the cedema glottidis.

The following cases are remarkable on account of their suddenness, and occurred during the last six months at Miran Shah in the Tochi Valley, they are interesting on account of their rarity and the prominence given to the disease known as "cerebro-spinal fever" during recent times.

CASE I — Sepoy Phul Badshah, 2nd P I, aged 19, service two years, was admitted to hospital on the morning of the 23rd October 1901, complaining of fever, headache, &c. Very shortly after admission, he became unconscious and passed stools and urine involuntarily in the bed.

I arrived in Miran Shah for the first time on this afternoon, and saw the patient at 6 P. M., at which time he was moribund. His temperature at this time was 103.6°F. he lay on the flat of his back with the legs flexed but not rigid, there was some twitching of the facial muscles.

Percussion over the lungs was everywhere clear, and auscultation revealed sonorous and sibilant moist râles due to blockage of the air-passages with mucus, breathing was short and shallow, numbering 40—50 to the minute.

Pulse small, low tension, and numbering 90. He was frothing at the mouth, and there was sordes on the teeth. Cardiac sounds normal, liver and spleen normal.

Pupils were contracted and fixed, and did not react to light nor accommodation.

His temperature at 12 midnight rose to 105°F, when he was sponged, "he lingered on till morning dying from coma." His temperature at the time was 104°F.

CASE II — Sowai Jhanda Singh, 2nd P C, was admitted on the 22nd December 1901, complaining of fever and its concomitants. On admission his temperature was 103°F, pulse full, tension good, and 92 to the minute. He received the ordinary treatment of a case of malarial fever, and everything was thought to be going on well, his temperature coming down to normal on the evening of the 25th.

In the early morning of the 26th December his temperature rose to 104°F, and became delirious, pulse 120, of fair tension.

Patient lay on his back in a semi-conscious state with his legs drawn up, and on raising him up in the bed, the legs previously extended became flexed and cannot easily be extended again. Kernig's symptom present.

Examination of the chest revealed nothing abnormal, and he had no cough nor spit. Cardiac sounds normal, no disease of liver nor spleen. *Tache cerebrale* present, pupils dilated, and eyes rolled from side to side.

When he was addressed he gave answers in an inarticulate manner, and then lapsed into delirium. I then treated the case as one of cerebro-spinal fever.

On the morning of the 28th December his temperature suddenly went up, to 108°F, pulse became thready, respirations short, shallow and automatic and in a collapsed condition, he died at 11-15 A. M.

CASES III AND IV, occurred in the detachment 4th Sikhs, almost at the same time. The first was that of Sepoy Guimukh Singh, occurring on the 1st March, and the second S Isai Singh, on the 3rd March. As the symptoms in each case were similar, I will detail the latter, being the more typical of the two. Case IV S Isai Singh, aged 21, service three years, came to hospital on the morning of the 3rd March complaining of general debility, and was given three days light duty and told to attend daily for medicine, as he complained of not feeling fit for his duties.

He came again on the evening of the 4th, when his temperature was 101°F, and the next morning I examined him carefully, the lung and heart sounds were normal, and he had no cough nor spit, his tongue was slightly coated, and he complained of sore-throat, which was found to be slightly inflamed. Pupils normal. He complained of "stiffness" of the muscles of his neck and back. Kernig's symptom marked. Bowels constipated. Temperature 101°F. Pulse 104.

Nothing of note occurred until the 6th March, when his temperature was 102°F in the morning, pulse 108, and respirations 36.

He lay in a semi-conscious state and could answer questions correctly, whilst at other times he muttered to himself

No involuntary evacuation of stools and no incontinence of urine. On swallowing a quantity of milk it was immediately vomited.

About 7-30 P.M. he became very restless, throwing the clothes off the bed and tossing his arms about, his temperature was then 103°F , pulse 110, and respirations 32. At 8 P.M. he became unconscious, and then what might be termed "forced automatic respirations" began with one long respiration in every 3 or 4. He lingered on in this condition and died from coma at 9 P.M.

Remarks—This last series of cases illustrate a disease which is, in my opinion, not so uncommon as one would suppose. I have conversed with various medical officers on the subject, and they state that the disease as described corresponds exactly with some cases they have had in their own practice.

Nearly all have occurred on the Frontier, and Lieutenant-Colonel Wright, I.M.S., 1/2 Gookhas, states that he had similar cases during one cold weather in Chitral.

I have little doubt in my own mind that such cases have been returned as "Remittent Fever" or "Pneumonia," and must acknowledge my indebtedness to the contributors of various papers in the *Indian Medical Gazette*, notably those of Major W. J. Buchanan, I.M.S., and Major E. Harold Brown, I.M.S., for further light on this subject, and in the present cases I was convinced that I had to deal with this disease.

The cases occurred at varying intervals, and the only connection as regards infection or contagion which could be traced was in Cases III and IV.

Their barrack was not overcrowded and had no insanitary surroundings,—it was, however, disinfected and lime-washed, with the result that no further cases occurred. The only source to which I can attribute the disease was to the storms of filthy dust prevalent round all frontier posts.

Unfortunately, I was unable to obtain a *post mortem* examination, but these cases again illustrate the futility of working without a microscope, and until Government rises to the necessity of providing every corps and unit in the service with one, much of our diagnosis will have to be "educated guessing."

I do not deem it necessary to go into the questions of diagnosis and treatment, as this has been most carefully detailed and criticised in the papers alluded to, but I would point out that sporadic cases do occur, and the chances are that the real nature of the case would not be detected.

On examining my first case, I think the most prominent feature was the cerebral nature of the complaint, evidenced by unconsciousness, the condition of the pupils, the loss of control over

the sphincters, the frothing at the mouth, and presence of sores on the teeth, and the essentially cerebral character of the respiration, this case along with Cases III and IV would be of the "acute type" as described by Major Harold Brown (vide *Indian Medical Gazette*, January 1901).

Case II was sub-acute in type, and the mistake was actually made of treating the case as malarial fever. Suddenly one morning his temperature having gone up to 104°F , you are confronted with a new set of symptoms, chief amongst which is Kernig's. In any case where at the beginning there is a kind of mental apathy, perhaps headache, a marked decubitus, erratic and marked disproportion between the temperature and pulse, perhaps photophobia, be on the look-out for this cerebral complication. This would, of course, be confirmed as in my cases by the following—The presence of "Kernig's symptom" the complaint of "stiffness," or "spasm" not amounting to pain in the muscles of the back of the neck and chest, though pain also is frequently present, the absence of marked lung symptoms, if the bronchitis in Case I be excepted, and the absence of disease in any of the other organs.

Though I have not had many cases, I would venture to suggest that the character of the respiration is almost always constant in cerebro-spinal fever. It is quick, numbering 25—40 to the minute, short, shallow and evidently the result of short sharp impulses, what might be termed "automatic impulses," arising from the respiratory centre itself. This shortness of breath, &c., cannot be accounted for by the presence of slight bronchitis alone, and pulmonary complications in this disease are uncommon.

Conclusion—The cases under review exemplify some other facts which should not be overlooked. I refer to the number of native soldiers who have been infected with malaria or are affected with a scorbutic taint.

This is a most potent factor, not only in the causation as a predisposing cause, but also materially affects the more prominent complaint. When reporting on a case of enteric fever in a Gookha at Bakloh, I ventured to call it "typho-malarial fever," owing to the marked manner in which the disease progressed, inasmuch as the disease commenced with malaria. Just in the same way, I have noted that natives who do not eat fresh vegetables and other anti-scorbutics are particularly liable to suffer acutely from disease and at times die sudden.

Take, for example, Case (b), who had evidently a scorbutic taint, this is often noted not only from the condition of the gums, but also from the presence of subcutaneous and sub-mucous hæmorrhages, and in this case I cannot but think that the cedema of the glottis and surrounding mucous membrane was in part due to a sudden effusion of blood, the result of scurvy.

Again, though in rapidly fatal cases of cerebro-spinal meningitis, a *post mortem* reveals nothing more than slightly increased vascularity, yet in others scurvy by diminishing the coagulability of the blood tends to increase the amount of serum effused into the meninges, and thus increases the pressure symptoms on the respiratory and other centres. This factor, therefore, influences the prognosis, as the respiratory centre is then supplied not only by imperfectly oxygenated blood, but the blood is also deficient in nutriment.

Another point is worthy of note—it has been pointed out, and there is a tendency to attribute some cases of sudden death—apart from those caused by poisoning, siniasis, etc.—to hyperpyrexia. It is in such cases that one might sometimes if in time be able, by the application of cold, to save the patient. It is not, however, the hyperpyrexia alone, but the cause of this symptom which we must attempt to fathom. Very often there is a history which will help one in the diagnosis.

The temperature is in many cases a useful guide, in Case II of the cerebro-spinal series, quinine had a marked effect on the third day in bringing down the temperature to normal, but there was a sudden rise next morning to 104° F, and taken along with the concomitant symptoms, the diagnosis was settled and treatment by means of cold applications, etc., was commenced.

These precautions, however, did not avail and hyperpyrexia, the result of the cerebro-spinal meningitis, intervened, which in conjunction with the pressure symptoms killed the patient.

Such are a few of the more uncommon cases of sudden death in Native regiments, and are notable in contra-distinction to those due to acute disease, as pneumonia, cholera, &c, cases of acute poisoning and those caused accidentally.

For whilst we may after careful diagnosis and treatment find our efforts have been unavailing, yet there is always the satisfaction of knowing that we spared no effort to give the patient every chance of recovery.

CASE OF CEREBRO SPINAL FEVER SIMULATING POISONING

By S BROWNING SMITH,

CAPTAIN, I M S.,

Civil Surgeon, Jhelum

THE perusal of the medico-legal number brings to my memory a case which occurred to me, in which I diagnosed the cause of death to be poison, a diagnosis which was proved by a second case, occurring concurrently, to be completely wrong; and, but for this other case acting as a control, I should have been certain to this day that my diagnosis of poison was a correct one. Thinking it may be of some interest I have extracted the following short account from my notes—Two Sikh recruits, say A and B, came to hospital, in uniform, having fallen out

from parade at the same time, at 8-30 A M, on the 19th April 1901, complaining of fever. A had a temperature of 101.3°, B of 100.7°, there were no other symptoms, and they were ordered to be detained for the day and given the usual diaphoretic. Towards the afternoon, temperature rose A to 103°, B to 103.6°, and at about 3-30 P M, in the case of A, B a little later, very severe and violent vomiting set in, of a greenish-yellow watery fluid, not containing any food or other substance, there was no hæmatemesis and no pain, abdominal or cephalic in either case, but after the vomiting had continued for a considerable time, pulse got weaker and also slight at first, and becoming more marked later, a curious irregularity in respiration, at one time long, deep inspirations, at another, rapid shallow ones.

In the case of A vomiting gradually decreased and stopped at about 2 A M, pulse was however very weak, and, as vomiting stopped, the patient passed into a condition of stupor, from which he with difficulty roused, with some injection of the conjunctivæ and gradually dilating pupils, and this rapidly developed into deep coma, and the pulse gradually failed, and death occurred at 5-30 A M, about 12 hours after the onset of serious symptoms.

There was never any muscular rigidity or spasm, and no delirium or complaint of headache.

Post mortem—Blood was very dark and muscles and organs darker than usual. There were patches of intense congestion on the mucous membrane of the stomach and here and there ecchymoses, with one large brownish-black patch about the size of a rupee, the congested patches continued for about 8 to 9 inches down the duodenum where they stopped, with the exception of slight enlargement of spleen, all the other organs of the body were healthy. Not thinking it absolutely necessary and wishing to mutilate as little as possible, I did not open the head. Specimens were sealed and sent to the Chemical Examiner.

The two recruits eat together with the other recruits of the regiment, but did not occupy the same barrack. On inquiry, I found that these two recruits had been taken, much against their will, together with others, down to bathe in the Jhelum on the previous day, the 18th, and had told the Jemadar Adjutant that the bathing would probably make them very ill. They occupied adjacent beds in hospital.

The sudden and severe vomiting occurring in the two cases at the same time, together with the above history, and the condition of the stomach of case A after death, fairly convinced me that the two youths had taken some poison, probably while in hospital with a view to showing how entirely bathing disagreed with them, and escaping such parades for the future, and I accordingly reported the death as caused by poison and the usual police enquiry began.

However, B, at the time of A's death was gradually becoming more sensible, and by 10 A M, on the 20th, was out of immediate danger, temperature falling to 99 in the morning. In the evening of the same day, temperature rose slightly, and there was another milder attack of vomiting which soon stopped and he did well till the afternoon of the 21st when temperature rose to 103° and he became delirious, pulse 80, respiration rate 40 with no signs of any lung affection, and complaining of headache and intense thirst, slight improvement on the morning of 22nd, much worse in the evening, delirium giving way to coma, spasmodic movements of limbs, more marked on the right side, conjunctivæ injected, pupils unequally dilated, and ptosis right eyelid, coma became profound on the 23rd, spasms gradually ceased and pulse failed, and he died at 5-30 P M on 23rd.

Post mortem—The condition of stomach and duodenum was similar, in a lesser degree, to the first case, congestion and inflammation of the cerebral meninges, particularly at the base, near the medulla, and around the cerebellum, in which places there was much purulent-looking fluid in the subarachnoid space and in the sulci, the grey matter of the cerebellum pink and softened, meninges of upper part of spinal cord injected, and excess of milky-looking spinal fluid.

I was now equally certain that both cases were cases of cerebro-spinal fever, the second case cleared up the first, and I had to report that my diagnosis of poison in the first was a wrong one.

The Professor of Pathology at Lahore kindly examined the spinal fluid and found the diplococcus intracellularis and, needless to add, the Chemical Examiner found no traces of poison.

The condition of the stomach and duodenum was produced entirely by the cerebral vomiting.

The absence, in the first case of symptoms of cerebral excitement, and the rapid onset of those indicative of failure of the cerebral functions, points rather to an inflammation of brain substance involving the higher centres than to a meningitis.

A Case of Hydatid

Begum Bibi, Mahomedan female, aged 15, came to hospital on the 6th June last, with a tumour in the upper and inner part of the front of the right thigh, about the size of an orange but much flattened, fairly moveable, and well defined, it felt very like a lipoma, only it was not so moveable. On cutting down I found it was below the deep fascia, and the capsule was rather firmly adherent to surrounding structures, among others the muscular fibres of the adductor magnus, in the sheath of which the tumour was, and in the dissection I punctured the wall and some clear fluid escaped together

with some daughter cysts, showing it was hydatid, there were some five or six of these from an inch to half an inch in diameter.

The tumour, bound down and flattened by the deep fascia and sheath of the muscle, before operation felt exactly like a solid tumour, and I did not recognize it as a cyst till I had cut down.

A METHOD OF DIRECT CULTIVATION

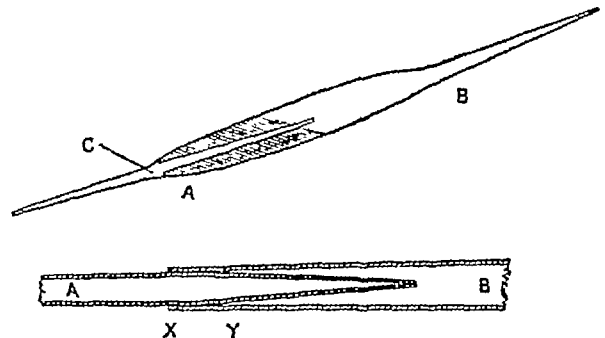
By E. R. ROST,

CAPTAIN, I.M.S.,

General Hospital, Rangoon

I HAVE found the following simple method very useful in cultivating from the blood or other fluids and from the lymphatic glands or inflammatory enlargements.

The method consists in utilizing a pipette containing an inner tube leading from one end of the pipette to its centre, so that a culture medium can be placed in the A end of the tube and yet blood be able to pass into the pipette from the A end, through the capillary tube.



These tubes can be easily made by inserting a small pipette A in a larger diameter tube B, uniting them at X and pulling out the A tube at Y, the culture medium can be then introduced at the B end, or the B end can be pulled out and the culture medium introduced afterwards by heating the A end and allowing the culture medium to ascend the B end as the A end cools, the latter is the best method as it ensures sterilization. The tube is finally sealed at both capillary ends and kept for use.

When required both ends are broken off, and the A end being run into a vein, or whatever one is collecting from, the blood runs up the central capillary tube and falls on the top of the culture medium.

Instead of a liquid medium a solid medium can be used.

The advantages of this method of direct cultivation are—

- (i) Its simplicity and the reduced risk of contamination, by the absence of handling.
- (ii) Its applicability in cultivating directly from the veins, lymphatic glands or swellings.

(iii) That specific virus retain their virulence very well in pipettes, and the chance of growth on the medium is thereby increased

(iv) The simplicity with which the culture may be treated of anaerobically or in which gasses may be passed through it and examined from time to time

(v) That the cultivated virus can be injected into an animal direct from the pipette, no handling ever having been used

A History of Hospital Practice.

LIVER ABSCESS CAUSING ACUTE JAUNDICE BY PRESSURE ON THE HEPATIC DUCT

BY D M MOIR, M.A., M.D.,

MAJOR, I.M.S.,

Offg Surgeon Superintendent, Presidency General Hospital Calcutta

IN the December, 1894, issue of the *Indian Medical Gazette* I published a case in which acute jaundice was associated with occlusion of the cystic duct throughout its length, and with marked thickening of the coats of the bowel about the gastroduodenal junction

In the present case the icterus appears to have been caused solely by the intra-abdominal tension of a huge liver abscess pointing on the under surface and pressing directly on the hepatic duct and on the upper part of the common bile duct

The pressure of a liver abscess per se as a cause of obstructive jaundice, along with Major Bedford's interesting analysis of the biliary concretions, form my excuse for bringing the case to notice. The former case was that of a Chinese carpenter who had been suffering from "terai fever" for a month at Jalpaiguri. This is the case of a planter from an unhealthy tea-garden in the Lakhimpur district, who had suffered from frequent attacks of malarious fever and once from dysentery. His medical attendant, who accompanied him, definitely stated that his last illness was only of two weeks' duration, up to which time he had been at work as usual. If the liver-trouble commenced only a fortnight prior to admission, the inflammation must have been of a most rapid and severe type, because almost the whole of the right lobe was found to be destroyed by suppuration, with patches of gangrene here and there, five days later, i.e., before the close of the third week.

On admission—J. N., æt 46, was brought from Assam to the General Hospital in a critical condition on the night of the 3rd April 1902. His general appearance and the local condition resembled that of an advanced case of cancer of the liver with extreme icterus. He

could not lie on either side, and had to lie flat on his back or to sit propped up. He was very weak and exhausted, emaciated and anæmic, feet œdematous and skin a vivid yellow colour, sleepless and mildly delirious. He had severe pain in the chest and abdomen, with some dyspnoea. T 101.4 F. *Circulatory system*. Pulse small, compressible, 132 per minute. Heart's action weak, with a soft mitral systolic murmur, and apex displaced outwards. *Respiratory system*. Breathing short, hurried and painful. *Right lung*. Marked dulness, with breath sounds faint or absent, over the lower two-thirds. Fluid suspected. Above this area there was coarse pleuritic friction, increased vocal resonance, and a clearer percussion note. *Urine* of a dark port-wine colour, charged with bile, albumen present, no blood corpuscles nor tube-casts, sp gr 1.015. *Alimentary system*. Tongue dry, furled and cracked. Motions sometimes white like curdled milk, at other times tinged a faint yellow colour. *Liver* was enormously enlarged, very prominent in the epigastrium, descending in the middle line almost to the umbilicus. It measured 9 inches in the right nipple and anterior axillary lines, and 7½ inches in the right para-sternal line. There was marked tenderness in the epigastrium, and to a less extent along the upper border of the liver.

Operation on 5th April 1902—An incision was made in the middle line over the most prominent part of the swelling in the epigastric region, the liver was found adherent to the parietes, offensive-smelling pus was found at a depth of an inch from the surface of the liver, and about a pint was evacuated. There was a good deal of venous hæmorrhage, and the patient took chloroform badly. Subsequently there was no improvement. There was a free discharge of bile, mucus and pus with a gangrenous odour. On the 6th there was low, muttering delirium, on the 7th he was not conscious, and he died early on the following morning.

Post-mortem nine hours after death—On opening the abdomen no general peritonitis nor fluid were found, but all structures in contact with the liver were adherent to it. Omental and intestinal adhesions to the liver were soft and separable, whereas those between the liver and diaphragm were strong and dense.

The left lobe of the liver was much more intensely yellow than the right lobe, owing to its forming a reservoir for bile which was dammed up in its very widely-dilated bile channels. It was pushed out of position somewhat downwards and to the left by the bulging abscess in the right lobe. The individual hepatic lobules appeared as yellow circles with dark blue centres.

The right lobe of the liver was enormous. In parts the capsule of Glisson was greatly thickened and adherent, and in several places it was thinned almost to bursting—especially on the under surface. It was impossible to

remove the organ without tearing and leakage of pus in several places. The interior of the lobe formed one large abscess with gangrenous walls containing a large quantity of thick yellow pus and ragged sloughs. This main abscess extended almost right across the lobe from its extreme left limit at the suspensory ligament to near its right margin. It appeared as if it would have burst soon in several places on the inferior surface, being particularly prominent in the quadrate, caudate and spigelian lobes, the last of which was a sloughing mass. Thus there was pressure exerted by the abscess to some extent on the gall-bladder, and to a greater degree on the hepatic duct, the termination of the right and left ducts, and on the commencement of the common bile duct. This prevented the escape of bile into the intestine except in minute quantities occasionally, and produced the jaundice. On the upper and front surface of the lobe, just beneath the thickest adhesions, there was a small abscess the size of a hen's egg. At the extreme right border there was another abscess the size of a hazelnut, which also lay under dense adhesions. Both of these abscesses had smooth, well-defined walls, and were separated from the main abscess by a layer of acutely inflamed liver tissue.

The operation, incision and drainage-tube, though in the middle line of the body, were well within the right lobe, which encroached considerably to the left.

The gall-bladder contained very little bile, which seemed normal. Its outer surface was matted and adherent to liver, omentum, duodenum and pancreas. The *ductus communis choledochus* was dissected out and followed up to its termination in the bowel. Its proximal end was empty, and was so much pressed upon by the bulging main abscess, that its lumen was practically obliterated though a probe could be passed. The rest of the common duct was patulous, but $1\frac{1}{2}$ inch from the duodenum it contained two minute masses of concretions which in nowise, however, blocked the passage of bile along the channel of the duct. One of these concretions consisted of two minute discs and the other of four similar discs, which resembled in size and shape the smaller "tuturates" that used to be in vogue before "tabloids" became so popular. These concretions appeared to be merely thick bile that might have been inspissated in the oblique crescentic folds of the cystic duct. On being dried they lost their disc-like shape and became amorphous or globular. It was on the *hepatic duct* that most pressure was brought to bear, and in common with the right and left hepatic ducts at their junction with itself, it was pressed on by the projecting abscess in the quadrate, caudate and spigelian lobes. The *right hepatic duct* was followed up till it subdivided in the abscess, and the channels were found to be consider-

ably dilated, and to contain a quantity of bile as well as numerous minute concretions similar to those already described. The *left hepatic duct* was very much distended with bile, admitting the index-finger in its lumen. Its ramifications were also much distended, so that the ducts of the left lobe formed a reservoir for more bile than could have been contained in a full gall-bladder. Hence the extreme pigmentation of the left lobe. Similar minute concretions were found in the bile channels, but none of them large enough to cause obstruction.

The *right lung* was bound down by thick pleuritic adhesions above, and there was thick, gumous, red fluid in the pleural cavity below. Part of the lower lobe was collapsed, and the rest of the organ was acutely congested, with marked hyperæmia of the bronchial tubes.

NOTE ON THE ANALYSIS OF THE BILIARY CONCRETIONS

By C H BEDFORD, D.Sc., M.D.,
MAJOR, I.M.S.,

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Chemical Examiner to the Government of Bengal*

THE granules examined by me were greenish-black, with a metallic lustre, and a few of the larger grains had somewhat conchoidal facets. Their average size was that of sand-grains. They were hard and gritty, and heavier than water, in which they were practically insoluble.

On analysis I found them to be mainly composed of calcium-bilirubin, with a small admixture of bilifuscin and biliverdin, and the ash yielded much calcium and a relatively small proportion of iron. No trace whatever of cholesterol was present. Copper (which is stated by Hammersten to be a "regular constituent" of such stones) was absent, as also were bilihumum and bilicyanin, both of which are occasionally to be found in such concretions. The granules are, therefore, lime-pigment (cholesterol-free) concretions, one variety of the so-called "pigment stones" found in the gall-bladder and intra-hepatic ducts, and which in man are generally of small size, though in oxen and pigs they have been found of the dimensions of a large walnut.

SOME CASES OF MALIGNANT DISEASE IN NATIVES OF INDIA

By E A R NEWMAN, M.D.,
CAPTAIN, I.M.S.,
Civil Surgeon, Bhagalpur

A HINDU male, *cæt* about 60 years, presented himself for treatment at the Bhagalpur Sadi Dispensary on the 3rd April 1902 for carcinoma of the left mammary gland, with extensive secondary affection of the axillary and subpectoral glands.

History—About three months previously when engaged in a struggle with two refractory bullocks, he felt a sharp cutting pain in the region of the left nipple. Soon afterwards he noticed a swelling at the seat of pain, which increased pretty rapidly in size, while a second swelling soon appeared and increased still more rapidly in the left axilla. The original swelling broke down after some two months.

Condition on admission—A fairly well nourished man who looked rather younger than his stated age.

The left mammary gland was enlarged, hard and fairly moveable. The swelling was some $3\frac{1}{2}$ inches in its maximum diameter. The skin over the centre was occupied by a fungating and rather foul ulcer $2\frac{1}{2}$ by $1\frac{1}{2}$ inch in diameter.

There was a second swelling occupying the left axilla, about the size of a goose's egg, hard and freely moveable. On 8th April under chloroform

the breast was freely excised with a portion of the underlying muscle to which it was adherent. The incision was prolonged into the left axilla, and the large mass of glands thoroughly removed after a rather tedious dissection. Some three or four small glands were lying under the pectoralis minor, and the apex of main mass of glands was in close contact with the axillary vessels. The upper portion of the wound was sutured, and the lower, which could not be closed, allowed to granulate. After progress was uneventful, and he left the hospital 21 days after the operation.

Remarks—The interest of the case is centred on the sex of the patient, and the extremely rapid growth and extensive involvement of the axillary glands.

The following cases of malignant disease have come under my notice in this dispensary since October 1901—

Number.	Date	Sex	Age	Caste	Disease	Duration	Operation and date	Date of result.
1	22nd August 1901	M	55	Hindu	Carcinoma of rectum	5 months	Left iliac colotomy, 11th Oct 1901 & 15th Oct 1901	Died 10th January 1902
2	3rd December 1901	M	35	"	Epithelioma, skin right flank	17 days	Excised, 4th December 1901	Discharged 3rd January 1902.
3	12th January 1902	M	35	"	Epithelioma, buccal mucous membrane left side	5 months	Excised, 14th January 1902	Discharged 1st February 1902
	17th February 1902	M.	35	"	Recurrence	Ditto	Excised, 26th February 1902	Discharged 27th March 1902
4	3rd February 1902.	M	40	"	Epithelioma, conjunctiva left eye	27 days	Excision of growth and eye ball, 3rd February 1902	Discharged 21st February 1902
5	13th February 1902	F	55	"	Carcinoma left breast	6 months	Amputation of breast and excision of axillary glands, 13th February 1902	Discharged 21st March 1902
6	10th March 1902	M	55	Sonthal	Sarcoma left orbit and superior maxilla	47 days	Excised, 12th March 1902	Discharged 7th April 1902
7	17th March 1902	F	60	Hindu	Epithelioma, skin right flank	17 days	" 18th " "	Do do
8	3rd April 1902	M	60	"	Carcinoma left breast	Described above		
9	20th May 1902	F	46	Mahomedan	Ditto ditto	27 days	Amputation of breast, excision of axillary glands, 23rd May 1902	In hospital

REMARKS

No 1—Disease too extensive for removal, palliative colotomy in left iliac region performed. Knuckle of colon drawn out and fixed by a double suture of the parietes below, gut opened, and suture divided on sixth day. Great relief of pseudo-dysentery, etc.

No 2—Simple epithelioma, caused by irritation of waist cloth.

No 3—Growth when small had previously been ligatured. Recurred. About size of a hen's

egg projecting from mouth. Removed after splitting cheeks. Recurrence in six weeks. Wide base freely removed. Lower maxilla scraped.

No 4—History of warty growth from conjunctiva close to cornea. Globe destroyed. Growth, the size of walnut, projecting between lids. Contents of orbit thoroughly cleared out.

No 5—Extensive carcinoma of breast. Axillary glands slightly affected. Breast amputated and axilla cleared out.

No 6—Whole of left orbit and side of face occupied by a fungating growth like a small cauliflower almost inoperative. Growth cut away. Orbit cleared out. Superior maxilla partially removed, and thoroughly scraped. Chloride of zinc freely applied to base. Extensive wound granulated well. No sign of recurrence, and discharged at own request three weeks later.

No 7—Simple epithelioma caused by irritation of waist-cloth.

No 9—Large carcinoma affected whole gland. Fungating ulcer about 2 inches in diameter at centre. Size of a fan sized melon. Axillary glands not very extensively affected.

Breast amputated and axillary glands some eight or nine in number cleared out, a few under the pectoralis minor rather difficult to get at. Wound closed by sutures throughout.

Two cases of visceral malignant disease occurred in the Central Jail under my observation during this period,—one a case of extensive sarcoma of the right lung, the other a case of carcinoma of the stomach, two-thirds of the organ were affected, the cardiac only being quite free.

A CASE OF ATONY OF THE BLADDER

By C DUER, M.B., F.R.C.S.,
CAPT., I.M.S.,
Rangoon

THE case is that of a healthy European in the 34th year of his age who has spent about fourteen years in the East. Though he has been a regular, and withal somewhat unfortunate, worshipper at the shrine of the goddess, he has apparently never indulged in excessive venery. He has had some seven or eight attacks of gonorrhoea, and some four years ago contracted syphilis, since which time he has been under my care. He suffered slightly from secondary symptoms in spite of energetic treatment, but has had no reminders for about a year and a half. Some two and a half years ago he suffered from an attack of cystitis clearly of gonorrhoeal origin, which, however, became quite well in a fortnight. He had never previously suffered from cystitis.

Some eight months ago, when consulting me on some other unimportant matter, he mentioned the fact that he had difficulty in passing water and thought he had a stricture. He said the difficulty was worst on rising in the morning, that the urine issued in a very small stream and kept stopping, and that the stream was often twisted and forked, and that he before had to strain much. He passed water before me the stream was small, feeble and intermittent. The urine was quite clear. The next morning I passed No 1½ steel bougie without any difficulty and assured him he had no stricture. Some five or six weeks after he developed acute

cystitis. He had had no gonorrhoea, but had been attending another practitioner who had told him he had a stricture and who had been passing catheters. The cystitis improved considerably under rest, dietetic and medicinal treatment, but washing out the bladder was eventually found necessary, and it was then discovered that there were 14 ounces residual urine. After some six or eight weeks he was able to empty the bladder, and the urine became clear, but the act of micturition was a most laborious and distressing procedure. The urine only issued in a stream on powerful straining, and it took a long time to empty the bladder. After much cross-examination it was elicited that he had not been in the habit of passing water before going to bed at night and was a heavy sleeper. Hence the bladder became distended and atonic.

During the last four months he has been emptying the bladder every four or five hours, but the power of his bladder has improved but little. Some few weeks ago with every precaution I passed a Jacques' catheter to make sure that he emptied the bladder. I found that he did so, but two days after the urine became cloudy and remained so for about a fortnight.

He hardly ever feels any desire to pass water. He has no ataxic symptoms.

He has now left for Europe on my recommendation in the hope that a cooler and more bracing climate will effect an improvement. The above case appears to me worthy of record on account of its rarity in so young a patient, its seriousness, and its resistance to treatment. It is clearly not one of those incurable cases of degeneration of the bladder muscle from extension of repeated attacks of gonorrhoeal inflammation from the mucous membrane, in which the bladder becomes unable to retain more than a small quantity of urine and unable to empty itself.

I hope to publish its further progress.

CASES OF REVERSED PERISTALSIS

By FERDINAND MOHROOF,
Asst. Surgn., Gynaeceal

THIS condition as its name implies is that in which the normal peristaltic action of the gastro-intestinal tract is reversed. The contents of the stomach, small intestines and of colon instead of going downward to be thrown out from the anal opening are sent back in a reversed direction and out from the mouth.

Causes—Out of a total of 89 cases which I have seen up to date, this diseased condition was present in 73 men and 16 females. I have never seen this state below 30 years of age. The youngest case is of 30 years, and the oldest of 83 years. The liabilities to this affection are strong between the age of 40 and 60 years, almost always strong and muscular people have been the victims of it.

Previous history—On admission the following description of the onset is the rule. The patient describes that he has been regular to his calls of nature but was unrelieved after the act, that he has neglected many times the act while he was called to it. This has gone on for months. He has been eating just the same quantity of food to what he used to eat before. In some cases eating of beef, large pieces of mutton, water-melons has been ascribed as the exciting cause of the disease. The patients are sometimes so ignorant of their own state that they say that their state has only been induced by the eating of above articles. The patient finds that on eating these articles he becomes constipated, either very small quantity of motion, hard and round, is passed, or none at all. He has now recourse to native physicians, principally for the relief of pain and distension, upon which the native physician gives a strong purgative (croton, senna, cassia fistula or scammony). The result of this purgation is that the bowels which are full of one continuous fecal mass and have been attempting to throw out their contents become more and more irritable and refuse to act at all. The stomach becomes irritable, and throws up every drop of nourishment or medicine given. The native physician seeing that his purgatives have not worked, and the patient has been constantly vomiting since he administered the medicines, leaves the patient on some pretence or the other, and the patient reduced to extremes has recourse to the hospital.

Conditions on admission—The aspect is very characteristic, little experience is enough to foretell the sufferings of the patient. The face is drawn, there are rings and hollows round the eyes. The eyeballs have gone back and are full of lustre and tell a story of pain and trouble. The nose is sharp and pointed, cheeks have fallen. The lips are red. The forehead is covered with perspiration. The fingers of hands and toes of feet have shrivelled and contracted. The patient is exhausted and talks with a hoarse voice. Every drop of milk, ice or soup or anything else he takes is thrown up immediately. The vomited matter varies in different cases. In early cases it only contains contents of stomach coloured with biliary fluids, in extreme cases fecal matter has been found in the vomit, all along there is no action of bowels. In some instances borborismus rumbling has been heard in the abdomen, but this is not very common,—it has been seen in about 10 per cent. of the cases. In most cases the abdomen is quiet, although it may be slightly distended. If food is given still, the stomach goes on rejecting it, the patient is exhausted and dies from inanition. In other cases where nourishment is withheld at least for 48 hours, the stomach may resume its functions anew. Under these circumstances I have seen enemata given per rectum thrown out by the mouth, only

a minute after their administration. The irritability of the alimentary tract is so great that it refuses everything either by the mouth or per rectum. If rest has been given to the bowels by total abstinence from food and from enemata from 3—4 days the stomach settles first. It accepts the little nourishment given, and then after 4 to 13 days the bowels move, many motions are passed one after the other, and if this state of diarrhoea is not controlled, the patient is completely drained of all vital fluids, and he dies.

Progress of the case—Tongue is dry and parched, has beefy appearance in some cases; in others it has a thick creamy yellowish fur on it.

Abdomen is moderately distended, and on pressure and percussion fecal accumulations are discerned in either flank.

Temperature—As a rule, temperature never goes beyond 101. It is generally between 99—100. The patient feels great heat in his body, and complains of burning all over his abdomen, arm and thigh. A patient of mine used to swallow from 18 to 26 lb of ice a day to cool himself from burning.

Heart—Heart is not excited in these cases, some patients have complained of uneasy feeling in the cardiac region, which I attributed to gastric and intestinal distension. Pulse is full and diffused, more calm, and numbers generally between 80—100.

Kidneys—Kidneys are seat of dull and heavy pain, urine passed is clear and varies in quantity from 4 oz to 3 pints. It contains urates, traces of albumen, indican in large quantities, sp gr is generally high, between 1020 to 1035.

Signs of improvements—First symptom towards recovery is cessation of vomiting. Second, return of bowel movement. This is important, as soon as bowels begin to act it is imperative that no purgative should be given. The intestinal mucous membrane is in a irritable and inflamed state, on the slightest provocation such as administration of cascara sagrada, belladonna, calomel or castor-oil has cost a life. The diarrhoea should be always controlled by incessant doses of opium till the bowels are semi-paralysed and work only under control, if opium has been administered, diarrhoea remains within limits. The patient slowly gets rid of all he has in his abdomen till it is completely emptied, when the bowels are free, and not till then, the appetite returns, this is the only time that something should be given. It should be simple, small in quantity and non-stimulating. I have generally given 2 oz of iced cream every fourth hour.

Duration—This varies. I have seen vomiting stop on second day, while sometimes when opium has not been given, or the abdomen has been irritated with nourishment, the vomiting and other troubles have lasted as far as 18 days.

Diagnosis—The aspect of the patient, the state of pulse, condition of urine, vomiting and non-action of the bowels for days is quite characteristic. The temperature never runs beyond 101. In all cases of internal hernia, there is a special pain. Seated in a special spot, the amount of shock is greater, and patient sinks much earlier, such cases if not relieved, end fatally in 24 to 48 hours. In cases of peritonitis the posture of the patient, the high temperature, the state of abdomen, the flickering pulse in peritonitis there is not absolute stoppage of motions or flatus. In colic the pain is almost always relieved by firm pressure. The tongue is characteristic in colic. In constipation incessant vomiting never occurs. There is no stoppage of flatus.

Prognosis—The mortality is generally high, if not properly treated. Under proper treatment, if patient is a strong-willed man, I see no reason why every case should not pull through if he has come to the hospital in proper time when his vital forces are able to undergo some time sort of taxation. Up to May 1899 I had treated 47 cases, out of which 25 died. Out of the remaining number of 42 which I have had in hospital and private practice, 11 died. So as the condition is better understood, the treatment and success is getting more hopeful.

Treatment—Briefly I would describe it as *absolute fasting* for three days, and administration of *opium* only in two-third of a quarter dose every 6th hour. Generally, when the patient has fasted for three days, vomiting stops, if patient cannot do the absolute fasting *very small* pieces of ice may be given at long intervals, say a piece of ice about the size of an eight-anna piece every half hour. The less nourishment given the better, the stomach regains its function sooner, and with it the bowel begins to act later. In some cases where these directions have been not followed carefully, the stomach goes on rejecting every particle given to eat. The vomited material continues to retain its fecal qualities. It is coloured with bile, while on the other hand the bowel begins acting as well, so the patient is drained on both sides, and he dies of inanition.

Enemata—I am rather against giving enemata to these patients. They come out by mouth as they are given per rectum in 5 to 10 minutes.

Morphia—Some cases were treated with morphia instead of opium, but the results were not good, and again opium had to be resumed. It appears that morphia has less intestinal action than solid opium.

Carbolic acid—I have added one drop of carbolic acid to each dose of opium, and some patients have been benefited.

Cocaine—This has been administered separately to quiet the stomach but without effect.

Glycerine and magnesiu sulphate—These have been tried, but the results were not hope-

ful—soda phosphate and soda sulphate, they are not very hopeful either.

Nourishment—When the vomiting has ceased and bowels have begun to act, iced cream in small doses, 2 oz every 2 or 3 hours, is beneficial. The less nourishment is given the better. Small quantities of milk, small bits of ice are the only articles we have to depend on. Once the patient is free of the fecal matter contained in his abdomen, the appetite is improved of itself and larger quantities are retained.

I may also mention that out of the total of 89 cases which I have treated of this disease, I have had four patients in which the bowels would not work at all. The bowel contents had become dried by absorption of fluid portion so that their downward movement was very slow. Constant massage on the descending colon with a round heavy iron ball helped to dislocate them down. The sigmoid and rectum had become practically paralysed and would not throw the contents out. In such cases the fecal absorption and irritation keeps the vomiting up, and patients were somewhat narcotised as if in a semi-sleepy state. The rectum was first injected with 4 oz of warm sweet oil, and after about half an hour the solid contents were scooped. The quantity removed in these four cases was respectively 5 lb, 3½ lb, 4½ lb and 4½ lb. The ages of these patients were respectively 58, 38, 52 and 78 years. The vomiting ceased at once, also the brain symptoms. The bowels which had not acted for two weeks in one case moved on the third day of the operation—the patient was cured, all these four cases recovered.

In the end I must apologize for giving no proper name to this condition. As regards its name I am in shaky position myself. Some one may call it as a paralytic affection of the bowels, but that it is not that is proved by the fact that bowels are not paralysed, they are working, but in a *wrong* direction, others may call it constipation, but constipation simply does not produce the fever, the vomiting (fecal character of it), the special look of the patient.

The real state of things as I have mentioned is that of reversed paralysis, the vermicular movement instead of happening in a downward direction changes its course, and bowels are emptied in an upward direction. So long this morbid condition is not rectified, the patient gets from bad to worse, absorption is nil, hence assimilation is also nil. Irritation keeps a flow of fluids from the nutrient vessels into the lumen of the gut. These are thrown out at each vomiting. The vital fluid is thus drained and impoverished till the patient dies. If this was a paralytic state of the gut, bowels must not act neither one way nor the other, but I think it is one of those attempts of nature that when she is unable to throw out contents from the natural route she selects some other easier passage for their expulsion.

THE

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OCTOBER, 1902.

ENTERIC FEVER AND SEWAGE DISPOSAL
IN INDIA

AN excellent article on the above subject appeared in the *Journal for Hygiene* (No 3, Vol 2, July 1902) from the pen of Major A R Aldridge, R.A.M.C., the Sanitary Officer, Bengal Command. He begins by pointing out, as has frequently been done in these columns, that though many epidemics of typhoid fever have been caused by pollution of central water-supplies, yet "evidence is accumulating that makes it difficult to attribute its widespread prevalence *in endemic form* (the italics are ours) in India and elsewhere to this cause." It is necessary, however, he says to guard against the assumption that the disease in such cases is not water-borne, for in India there are innumerable chances of water, when stored for domestic use, being contaminated, and "when it is claimed that dust or flies play an important rôle in its dissemination, it is not necessary to assume that the bacillus is taken into the mouth or respiratory passages directly, but rather that it is conveyed to water, &c, by means of dust or flies."

In Indian cantonments sudden epidemics, such as are to be expected from contaminated central water-supplies, account for but a small proportion of the cases of enteric fever, and pipe water-supplies have not produced the improvement that was expected, nor has boiling the water, carried out in many stations for several years past, apparently produced any reduction. Major Aldridge quotes a significant table of 24 large stations in India, and the 13 which have the highest admission rates for typhoid are geographically very distinctly separated from those having low rates, all the former being situated in the dry dusty alluvial plains of Upper India, where the climate for a great part of the year is excessively dry and dusty. Moreover, in the former group a table shows that the greatest prevalence of typhoid is in April and May, whereas in the other group of damp stations the exacerbation of the disease is seen in July, August and September, the rainy

months. No peculiarity of water-supplies will account for these differences.

There is, however, one factor common to all of these stations, *viz*, the dry earth system of latines and the trench system. The latines and urinals are not provided with impervious floors, and all spillage soaks into, what in most stations is, a dry powdery earth. It is, says Major Aldridge, a matter of common observation that water stored in such dry dusty places soon becomes covered with a scum of dust, and the same must often happen to food and cooking utensils. Moreover, as too frequently latines are placed near cookhouses and stored water, it can hardly be doubted that some of this dust is derived from the latines. Similarly, in many places, the trenching grounds are not far from barracks, and the sandy soil from them can easily be conveyed to the barracks. When we consider that persons recovered from typhoid may for months continue to disseminate the disease by means of faeces and urine, it is not difficult to understand that there must be repeated infections from fresh evacuations, and in these cases the germs are conveyed indirectly by dust and flies to stored water and food, rather than to well-protected pipe-water supplies. In accounting for the almost universal prevalence of *b. typhosus* in Indian cantonments, Major Aldridge does not overlook the recent increased recognition of the disease among natives as recorded in our columns for the past three or four years.

Major Aldridge then shows that the medical histories of recent campaigns confirm these views. With the single exception of the Ashanti War, all recent campaigns have been in dusty countries, and in all enteric has been very prevalent.

At the Modder River "the soil was trampled and pulverised by thousands of feet to an impalpable powder, and this, mixed with excreta, was wafted in dense clouds." The men urinated and defecated in the neighbourhood of their tents (Ryerson). In 1885, in Egypt, certain of the troops supplied with distilled water suffered severely. In the Spanish-American War at Jacksonville, Lexington and Knoxville, the troops used water from the same source as did the civil population, yet the troops suffered severely, and the civil population remained practically exempt.

The writer thus shows that in combating enteric fever in tropical countries, it is not sufficient to obtain a water pure at its source,

not even to purify a doubtful water, but contamination between the source and the mouth of the drinker is even more necessary to be avoided. To meet this contingency Major Aldridge makes the following proposals —

(1) Avoidance as far as possible of storage of water near habitations where, from the proximity of dry earth latrines and filth trenches, it may be polluted. Boiling (he very correctly adds), on account of the danger of contamination during cooling, is likely to add to rather than lessen the dangers (and, we may add, that so far we have seen no simple and effective means of rapidly cooling boiled water. A fortune awaits the man who discovers such, for it would be largely used in barracks and in prisons all over India).

(2) Latrines and urinals should be situated as far as practicable from kitchens and stored water. They should have impervious floors (this is absolutely necessary, and has been adopted for years in all new latrines in Bengal jails).

(3) All food, feeding utensils, &c., should be protected from dust and flies.

(4) It is recommended that a trial be made, in some cantonment which has suffered much from enteric fever, of any form of water carriage of sewage.

(5) For sewage disposal Major Aldridge recommends one of the bacterial methods, with application of the effluent to the land.

As the question of the septic tank method of sewage disposal is exciting general interest at present, it may be well to quote Major Aldridge's opinion on the vexed question of the purity of the effluent.

"Experiments in India have already shown that even with a dilution as low as three gallons per head, a satisfactory amount of purification can be obtained, the effluent being non offensive and non putrescible, while in England the criterion of these results is that the effluent shall be sufficiently pure, as measured by chemical standards, to allow it to be discharged into rivers, in India this will seldom be necessary. Irrigation is necessary during a considerable part of the year in almost all parts: this in fact is one of the chief obstacles to the profitable application of crude nightsoil to the land. The same degree of purification need not therefore be insisted upon. A non putrescible effluent, in which organic matter has been reduced to constituents which can be readily assimilated by growing plants is all that is required, and such an effluent has been shown to have considerably greater manurial value than crude sewage. In fact the water of the sewage, which is an obstacle to its disposal in England, would be an advantage in India."

Major Aldridge concludes his valuable article by alluding to some experiments which he has been able to carry out with success in a closed septic tank.

LONDON LETTER

THE IMPERIAL VACCINATION LEAGUE

THE severe epidemic of small-pox, which has recently visited London and other places, and caused such a large amount of sickness and death, has made a deep impression on the public mind, and the question is being anxiously put whether a recurrence of this terrible experience can be prevented, and in what way. One outcome of this anxiety is the formation of the "Imperial Vaccination League," the proposal for which is signed by many distinguished and influential persons commencing with the Archbishop of Canterbury. The necessity of organising an association of this kind is accentuated by the fact that the existing Vaccination Act (of 1898) will expire next year, and that fresh legislation will be needed in consequence. It is with a view to taking a deliberate review of the present position of vaccination in this country and of discussing and determining the lines on which future effort should run, that this league has been started. The preliminary prospectus which has been issued draws attention to the cost in ill health, loss of life and expenditure of money, which the recent epidemic has caused and contrasts Great Britain with Germany in respect of prevalence of small-pox and efficiency of vaccine protection. It is acknowledged that the Act of 1898 has, on the whole, increased the amount of vaccination and that the "conscientious objector" clause has not done as much harm as was feared. It is not proposed to abolish this clause, but to work it with greater stringency. The need of revaccination at or about puberty, as in Germany, is strongly pressed and some alteration in the direction and control of vaccination indicated. The propriety of creating a special vaccine department is mooted, and the advisability of making better arrangements for the supply, by state agency, of reliable lymph urged. It is also known that a better definition of "efficient vaccination" is requisite and a more thorough inspection in order to secure it. The movement has been welcomed by the press, medical and lay, and cannot fail to be useful. Unfortunately, in the onward rush and whirl of twentieth century life,

the painful experiences of the past are apt to be forgotten, and the lessons taught by epidemics and disasters to be laid aside. If this league succeeds in converting into law the prevailing belief that more stringent measures of small-pox prevention are imperatively required, it will achieve a most excellent purpose.

EARL ROBERTS AT NETLEY

THE distribution of prizes by Lord Roberts, at the close of the 84th session of the Army Medical School, was in itself an interesting event, but it acquired additional interest from the fact that, in all probability, this is the last ceremony of the kind which will take place at Netley. The surgeons-on-probation who passed through the school during this session all belonged to the Indian Medical Service, and the Commander-in-Chief addressed them in sympathetic and encouraging terms. Temporary arrangements have been made for testing the new "Medical Staff College" in London on the 1st of September. The recent competition has given the Royal Army Medical Corps as many men as were wanted. The competition for the Indian Medical Service commenced yesterday and it remains to be seen whether this service retains its attractiveness. The new warrant for the home service appears certainly to have rehabilitated it in professional estimation. The selected of both services are to undergo a two months' training in military hygiene and pathology, and the Royal Army Medical Corps men are then to be sent to Aldershot for training in hospital administration, military law, ambulance and company drill and the like, and the Indian Medical Service men to proceed to Netley for a two months' course of instruction in military medicine and surgery and some other cognate subjects. These are the present arrangements, and they will probably continue until the hospital and its adjuncts, which are to be erected at Millbank, have been completed. It is a subject of wonder to many why the existing arrangements at Netley have terminated until the buildings for the Medical Staff College had been completed and full provision made for starting it on a sound and permanent basis. The explanation generally given is that the iron must be struck while it is hot, and that possible changes of ministry might perhaps interfere with the carrying out of a project which is held to promise great benefits to the service. How far this is a reasonable justification for making

temporary arrangements, which cannot be otherwise than unsatisfactory, it is not easy to say. But it is evident that the will and determination to make the new Medical Staff College a thorough success are at present in lively and active existence at the War Office.

K. McL

21st August 1902

Current Topics.

STONE IN THE BLADDER IN EGYPT

THE following extracts will prove of interest to surgeons in India. They are from a paper in the *Intercolonial Medical Journal of Australasia* (20th July 1902), by Mr F C Madden, who has succeeded Mr Herbert Milton as Professor of Surgery in the Egyptian Government Medical School at Cairo —

CAUSATION — A certain proportion of stones in Egypt depend upon the presence of the pathological manifestations of *Bilharzia hæmatobia* throughout the urinary system. It has been stated that the nucleus of many of these stones has been a *Bilharzia* ovum, but it is more reasonable to suppose that the true nucleus has been a piece of a papilomatous *Bilharzia* tumour (which would contain ova), which has broken off and become encrusted with phosphates. From this beginning, the stone very rapidly increases in size by the further deposit of phosphates. Certain stones originating in this way are quite white, and consist entirely of phosphates, and this is not extraordinary when one sees the *post mortem* appearances of a severe case of *Bilharzia* of the pelvis of the kidneys, the ureters, the bladder, and the urethra. The rapid increase in size is also easily understood, for the urine must have been alkaline, and depositing phosphates ever since the urinary infection became well established.

But all stones in Egypt are certainly not *Bilharzia* in origin, and we must look further for other causes. The universal drink of the whole native population is unadulterated, and certainly unfiltered, Nile water, which at certain seasons of the year is strongly impregnated with lime salts gathered from the limestone country through which the river passes in some part of its course.

In a recent discussion on the subject of stone in the Tropics, introduced at the Annual Meeting of the British Medical Association by Mr P J Freyer, one of the pioneers of lithotomy in India (and a brother of a well known Melbourne graduate), there appeared to be considerable difference of opinion as to the part played by lime salts in solution in the drinking water in the formation of stone in the urinary system, and it is probable in Egypt, at any rate, that the diet of the people is a much more important factor in its causation.

The natives of Egypt and the Soudan are almost entirely vegetarians, meat being taken only in small quantity, and generally, in the form of soups of various kinds, which only serve as vehicles for vegetables, of which, indeed, the soup is mainly composed. Green vegetables are particularly favoured. It is probable that there is an excessive acidity of the urine from the large and constant excretion of vegetable salts, and with the least encouragement in the shape of a nucleus, some combination of uric or oxalic acid occurs, becomes deposited, and will continue to be deposited as long as

the same condition of urine persists. That this supposition may be correct, gains support from the fact that the fellahs agricultural labourers are more commonly affected, while those of the native population who have come more directly in contact with Europeans, and have, to a very large extent, adopted their habits and mode of living, are comparatively rarely the subject of stone. In Egypt, however, as in other countries where stone is common, there is a distinct geographical distribution, the great majority of the cases coming from the country north of Cairo, and very few from Upper Egypt and the Soudan, although the habits and diet of the people are precisely the same in all the land of Egypt.

It is an interesting fact that stone in the kidney is very rare, not one case being met with in the present series, though occasionally hydronephrosis, depending on a stone wedged in the pelvis of the kidney, is met with. As a rule, however, deposits that form in the kidney pass by the ureter to the bladder as fine gravel, without giving rise to any severe symptoms in transit.

"As regards the operation of lithotripsy, the largest instrument the urethra will carry without gripping should be used, and the largest evacuating catheter, a straight one being much to be preferred to a curved. If, on the passage of the sound, which must always be used to confirm the diagnosis before proceeding with the operation, a capacious urethra, but constricted at the meatus, is found, the meatus must be incised with a blunt pointed bistoury to one side of the frenum. In this way, a very much larger catheter can be passed. With straight instruments particularly, difficulty is frequently met with just behind the scrotum, and especially in a rough urethra the finger in the rectum may be of use in deflecting the point in the right direction.

There is but little to mention in connection with the cutting operations for stone, except to draw a distinction between what is generally known in India as Keith's operation, and that which I have called perineal lithotripsy. In the former, the urethra is opened by a median incision a short distance in front of its prostatic portion. Through this opening a full sized lithotrite is inserted, and the lithotripsy is completed in all particulars through this incision. In perineal lithotripsy an ordinary median Cock's puncture, or a lateral lithotomy incision is made into the bladder. A lithoclast is introduced directly into the bladder, and the fragments are subsequently removed by stone forceps and scoops, after which the bladder is washed out through a catheter introduced by the urethra. I cannot speak from experience of Keith's operation, but perineal lithotripsy is exceedingly useful in cases of large stones in a firmly contracted bladder, especially if there is any difficulty, either in the urethra or on account of the size of the stone in the introduction of the lithotrite or other instruments required for lithotripsy. It is usual not to introduce a tube, but to leave the perineal wound open to provide its own drainage.

Supra pubic lithotripsy is reserved for stones encysted in the anterior wall of the bladder, and is not nearly such a satisfactory operation as perineal lithotripsy, owing to the long persistence of the resulting sinus with the accompanying risks of infection through the open wound. The old operation of removal of the stone whole by this route is very rarely carried out, a smaller incision into the bladder and crushing with a large lithotrite, or preferably with a lithoclast, having very largely superseded it.

The classical lateral and median lithotomy need no further advertisement, but wherever it is possible to obtain the instruments necessary for lithotripsy, it is becoming quite a rare operation. It is an interesting fact that our instrument cupboards at Kasr el-Aini can not boast a single lithotomy knife.

The after treatment of the operation is purely Egyptian, for, in the majority of cases, a patient who is

operated on at 9 A.M. spends the rest of that day in bed, walks about the ward on the next, and absolutely refuses to stay in hospital longer than the morning of the third day. In the case of a more rational being, however, rest in bed should be insisted upon for three or four days, barley water and fluid diet ordered during this time, and a gradual return made to full diet if the condition of the urine warrants it. It is quite unusual to wash out the bladder after operation, unless there is bad cystitis, and should the temperature rise, as is sometimes the case, there is nothing so good as quinine, given in 1/2 gr dose, followed by two or three 5 gr doses at four hourly intervals. For the cystitis, all the usual drugs are from time to time prescribed, but the old formula of buchu and hyoseyamus is probably most generally useful, though salol and the benzoates are also of service. Should the cystitis persist, and especially if there is very severe Bilharzic infection, it may be sometimes necessary to open the bladder from the perineum for drainage."

In spite of the views of general surgeons in England the triumph of Indian methods of operation is complete. Whenever stone is plentiful, there litholapaxy is the operation of election.

MORTALITY IN TYPHOID FEVER

The following table gives interesting records of the case mortality of typhoid fever in various places and at various times and under various methods of treatment. We extract it from an article in the *Pacific Medical Monthly*. It is difficult to resist a conclusion in strong favour of the bath treatment of this disease, and the lower death-rates contrasts markedly with the 25 per cent case mortality of enteric fever cases in the military hospitals in India of recent years—

"Taylor, Lyons Hospital, 1866 to 1877, 220 cases, expectant	26.2
From 1849 to 1866, English Army	23.8
Vienna, 17,000 cases	22.5
Delafield reports, 10 years of expectant treatment among 1,305 cases in various New York hospitals	20 to 30
Brand, various sources, expectant, 11,124 cases	21.7
Vogl, Munich Military Hospital, 1841 to 1878, all kinds, chiefly expectant, 5,484 cases	20.7
Pennsylvania Hospitals in 20 years	19.5
New York Hospital, 1877 to 1899, 501 cases	19.4
Jaccoud collected over 80,000 cases treated upon expectant	19.23
Nearly 14,000 London hospital cases	17.8
Murchison reports 27,000 cases expectant	17.45
Tripler, Lyons Hospital, 1873 to 1881, expectant and bathing, 629	10.5
Presbyterian Hospital, New York, 1832 to 1890, 250 cases	16.1
Hare, Brisbane Hospital, 1882 to 1887, 1,828, expectant, quinine and cold wet sheet	14.82
Wilson, German Hospital, Phila., expectant and some baths, 271	13.29
Vogl, Munich Military Hospital, 1868 to 1881, expectant and baths, 2,841 cases	12.2
Ziemssen, Tubingen Clinic graduated baths and antipyretics, 2,000 cases	9.6
Riess, Berlin Hospital, permanent tepid baths, 1,000 cases	8.5
Vogl, Munich Military Hospital, 1893, baths of 59 degrees, 426 cases	8.4
Hare, Brisbane Hospital, 1875 to 1881, cold baths and some antipyretics, 1,173	7.84
Brand reports 10,000 cases of cold baths of all kinds	7.8
J. O. Wilson, German Hospital, Phila., strict cold baths, 408 cases	7.8
Vogl Munich Military Hospital, 1877 to 1887, strict cold baths and antipyretics, 702 cases	7.6
Hare, Brisbane Hospital, 1887 to 1896, strict	7.05
Brand, 1,802 cases	

Naunyn, Königsberg Clinic, strict cold baths, 145 cases	60
Murtra, Australia, strict cold baths, 173 cases	54
Sihler, private practice, strict cold baths, 80 cases	500
Tuttle, New York Hospital, 1893, strict cold baths, 76 cases	500
Vogl, Munich Military Hospital, second division, 1882-1887, more strict baths and less antipyretics	41
Brand, 5,573 cases from various German and French sources, more thoroughly and systematically treated	39
Vogl, Munich Military Hospital, 1882 to 1887, strict cold baths, 141 cases	35
Bouveret, Lyons Red Cross Hospital, 1891, strict cold baths, 100 cases	30
Vogl, Munich Military Hospital, first division, 1880, strict cold baths, 428 cases	27
J O Wilson, German Hospital, Phila., 94 cases	94
Brand reports 2,150 cases treated before the fifth day	00
Borning, private practice, strict cold baths, 61 cases	00
Barker, private practice, strict cold baths, 35 cases	00
Baruch, private practice, strict cold baths, 32 cases	00

THE IDENTITY OF SURRA AND TSETSE FLY DISEASE

We have received a reprint of a valuable note by Captain L. Rogers, M.D., I.M.S., communicated to the Royal Society on the transmission of the *Trypanosome Evansi* by horse flies, and other experiments pointing to the probable identity of Surra of India and Nagana or tsetse-fly disease of Africa (Vide Proceedings, Royal Society, vol 68). It is pointed out that Koch, having seen surra in India and the other disease in German East Africa, pronounced them identical. Dr Rogers then describes his experiments and shows that when horse-flies, which had just bitten an infected animal, were allowed to repeatedly bite a healthy rabbit or dog infection in the latter was readily produced. He also points out that latent cases of surra in cattle may often be a possible source of infection.

As to the argument that surra is essentially a chronic disease in India and a rapid and fatal disease in Africa, Dr Rogers points out that the difference is one of degree only and cases of tsetse fly disease recover sometimes in Africa and cases of surra in India die, and moreover Koch has shown that while the disease is fatal to ordinary donkeys in East Africa, yet the Masai breed of donkeys are absolutely immune, thus pointing to a difference of susceptibility between different breeds much greater than the difference between the two diseases nagana in Africa and surra in India. Rogers concludes his paper by stating that, so far as he has investigated, "the results obtained in the case of surra closely agree with those of the Royal Society's Committee in tsetse fly disease and so far as they go they support the view that the two diseases are probably identical."

INSECTS AND CHOLERA

MOST of us who have had much to do with cholera in India, though agreed that the drink-

ing water is the chief source of outbreaks, are nevertheless alive to the possibility and probability of infection by flies, as in the now well-known cases in the Gya and Baidwan jails, therefore the following extracts from a paper in the *Edinburgh Medical Journal* (August, 1902, p 137) will be of interest.

Dr Andrew Mackenzie describes an outbreak in a famine relief camp at Godhra in the hot weather of 1900.

"The next point of interest, and to me the chief one is how the disease attacked persons who had no relation whatever to such contaminated water—Europeans, friends of my own some of them, who were by no means ignorant on the subject of cholera, and who were most careful that not a drop of water but the purest would be supplied to them, and even that only after being well boiled. After a few weeks' observation, it seemed evident that if the disease originated in the water some other propagating element must be at work. Needless to say, the contaminated water was no longer used by any one. I fully recognise that other waters may easily have become polluted, but still there can be little doubt that many wells were carefully guarded against contamination, and even from these every drop of water was boiled, cooking vessels, dishes, etc., were washed in boiled water, or in water to which potassium permanganate had been added. Yet some people who acted thus carefully were attacked. It seemed to me most probable that the cholera bacillus obtained entrance to the human intestine in some cases by means of the food, and also that it probably reached the food after the cooking. The question then arose, by what means could this take place? To give any idea of the numbers of flies that covered every article of food at this time would be quite futile. Nothing could be placed upon the table even for a moment without becoming literally black with flies. It so happened, too, that with the advent of the cholera flies seemed to increase in such alarming numbers that they became a perfect plague, scarcely a bite of food could be even carried to the mouth that was not covered by flies. About this time a European living at a town sixty miles off wrote to me that flies there had become a plague, only a few days after I received word that he had died of cholera. Another European forty miles away was also attacked at the same time. Both these men, I believe, were most careful about the water. In Godhra, three of us, Europeans, lived together. At each meal we kept boys on two sides of the table with towels to prevent flies settling. At no time had any of us the least manifestation of cholera. No less than forty famine orphan children lived in the same house, several of whom were attacked, while all, I think, had some intestinal troubles. They used the same water as we did ourselves. I unhesitatingly attribute our immunity to our carefulness as to the flies. It seemed to me then also that the number of cholera cases varied in direct proportion to the number of flies at any given time. On one point, however, there can be no doubt, cholera and flies increased and decreased with each other. I cannot, indeed, in any case see how flies could escape being cholera carriers. One receives a great shock in visiting a native stricken with cholera. The patient is usually lying on a floor, and only partially covered with a few rags. The ground round about the patient is in a state too awful to be described. A cloud of flies is present, which rise with a loud hum on a motion being made near the patient, but at once settle again.

Before closing these remarks, I would like to express the opinion that during a cholera epidemic it would be good advice to warn people against flies. Every precaution possible should be taken to prevent these insects settling on food. Also the use of fly papers, or any other means of fly destruction, should be encouraged."

PARATYPHOID

THE *American Journal of Medical Sciences* (August) contains several valuable papers on "Paratyphoid fever," and paracolon infection. We extract the following conclusions from a review of the subject by Dr W B Johnston, based on four cases in the Johns Hopkins Hospital, Baltimore —

"There is a type of disease due to infection with the paratyphoid bacilli, which, in all its variations, presents a clinical picture identical with that frequently produced by infection with *B typhosus*

2 Diarrhoea and a termination of the fever by crisis are apparently of more frequent occurrence than in typhoid fever

3 Myositis and purulent arthritis, rare complications in typhoid fever, have been recorded

4 Though the disease may be severe it is usually mild, and fatal cases are rare

5 Absence of intestinal ulceration may prove to be a distinctive feature of the disease

6 The disease, though wide-spread and occurring in localities where typhoid fever is present, is comparatively rare

7 Every instance of negative Widal reaction is not due to infection with paratyphoid bacilli"

We note that in the *Polyclinic* for August (p 403), Mr E Treacher Collins describes a case of nightblindness with xerosis of the conjunctiva in a boy, aged 7, who "had been playing a good deal in the bright sunshine" Till recently nightblindness was supposed to be a somewhat mysterious symptom of scurvy, now it is recognised that the glare of bright sunlight is the chief cause. We also note that Mr Collins refers to the cod liver oil treatment as a matter of course, though when we published some cases treated by liver a couple of years ago we could find no mention of it in the text-books

In the same Journal Mr J Hutchinson publishes an interview with "Surgeon Pank," presumably Lt-Col P Duell Pank, I.M.S., of Jaipur. Mr Hutchinson nursing his favourite heresy finds that "fish food is not impossible" even in the dry desert of Bikanir, and granting the possibility of fish in the rainy season. Mr Hutchinson at once sees an origin for the few leper cases there to be found

Dr A MITTRA, Chief Medical Officer, Kashmir, has published a useful little pamphlet on Plague, for the use of officers of the Kashmir Medical Department. We note that he is a firm believer in rats as a great factor in plague dissemination, and that "the chief mode of infection is by the rat-flea." It is a pity Dr Mittra was not more up to date on the question of the rat-flea theory, which has been pretty well exploded by this time

Apart from this point the pamphlet is good as far as it goes, but we might have been spared the illustrations.

We publish in this issue an account of the transactions of the first meeting of the recently started Port Blair Medical Society. The address "On the Care of the Convict" by Captain E E Waters, I.M.S., the Senior Medical Officer of the Settlement, will be read with interest by Civil Surgeons all over India

We are glad to notice that medical officers from India took a prominent part in the proceedings of the Tropical Section at the recent British Medical Association Meeting at Manchester. The discussion on dysentery excited most interest, and it had to be ended for want of time before all who wished to speak had spoken

BABU DAIS RAJ RANJIT SINGH, L.M.S., of Allahabad, has published, in Urdu, a very useful pamphlet on the history and nature of plague, which, as it is very cheap (only four annas), might with advantage be freely circulated in times and places of plague prevalence

We regret having mislaid our copy of the *Transactions* of the Nagpur Malaria Conference, consequently we shall not be able to review it till our November issue. Meantime we strongly recommend its perusal to our readers

THE two articles on *Lala-azar* or Malta Fever in this issue will be read with interest. It is obvious that great care is necessary in accepting a "Malta Fever" serum reaction as a sole basis of diagnosis. It may be that Malta Fever does exist in Assam, but we think few will be inclined to accept its existence as a fact on the "serum test" alone without strong clinical evidence. We hope that the now universal use of serum tests will not have the effect of making us neglect the clinical aspects of disease. The serum tests are good as far as they go, but we protest against a too confident reliance on them, and apart from other clinical facts, including microscopic examinations of the blood.

We direct attention to the letter on the "Introduction of Vaccination into India (p 413) from Lt-Col W G King, I.M.S., the Sanitary Commissioner of Madras

NOTES FROM CONTINENTAL EYE CLINICS *

THE following papers consist of extracts from my note-book during a tour thorough the Continent, taken with a view to visit some of the principal European eye hospitals

Through the great kindness of the Madras Government I was furnished everywhere with introduction to H.B.M.'s representatives abroad, and was thus enabled to see the principal ophthalmic institutions of the places I visited without loss of time. Nothing could exceed the

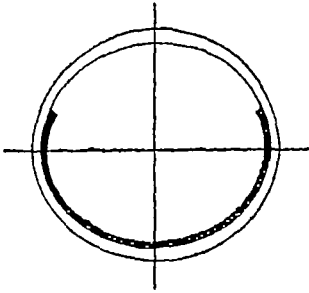
* This should have been printed first, but was mislaid.—
ED, I.M.G.

kindness I received from the foreign governments and from their medical men

It is not pretended that there is anything original in these papers, but possibly some of the notes may be as interesting to other Indian medical officers as they were to the writer

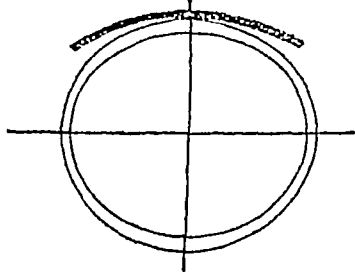
several instillations of 3% cocaine solution, and makes a corneal incision (*vide* his diagrammatic comparison of his and other incisions), involving half the cornea, he too *allows no assistant to help him* in the extraction, using a speculum of his own contriving, the aims of which pass over the nose instead of to the

Fig 1



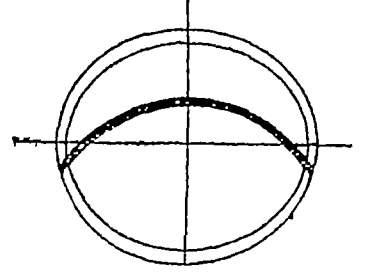
Daniel 1752

Fig 2



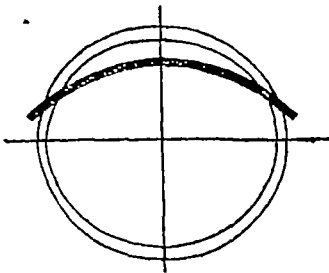
Graefe 1865

Fig 3



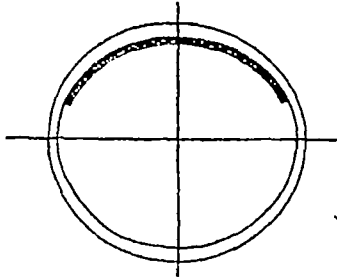
Lebrun 1872

Fig 4



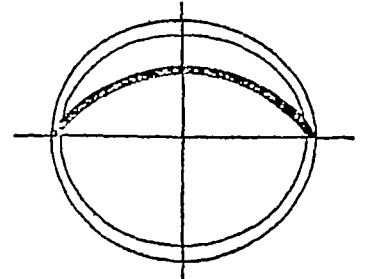
Liebreich 1872

Fig 5



Wecker 1878

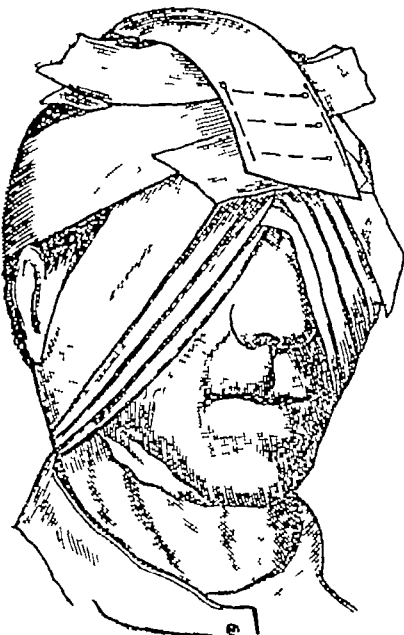
Fig 6



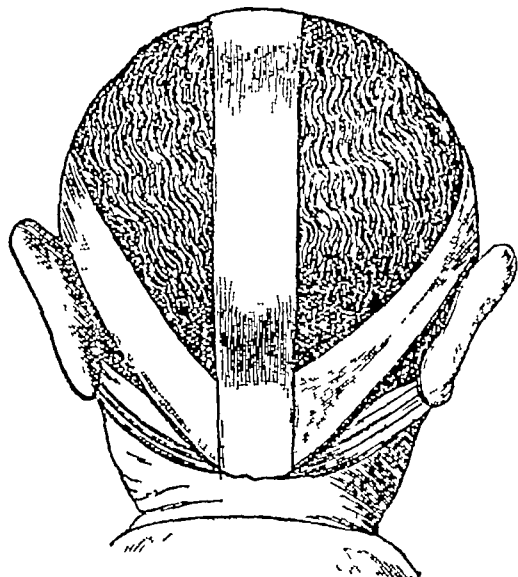
Sbordone 1892

Naples, March 22nd, 1902—I had the opportunity of seeing Professor Sbordone operate on several cases of cataract. He washes out the eye and lids with $\frac{1}{1000}$ perchloride, uses

temporal side, delivery is effected with two knife-handles, and the chamber is cleared by massage, *both eyes are operated on at one sitting*. The first dressing takes place on the third day



SINGLE TO PASS OVER THE VERTEX
LENGTH 22"
2 1/2"



and both eyes are opened on the fourth day, wet perchloride pads, covered with cotton-wool, are kept in place by the bandage which is shown in the diagrams, and which gives very firm pressure.

Laceration of the capsule is effected, after the incision, by means of capsule-forceps, and he makes a point of removing a large piece of capsule in every case, he does not perform iridectomy and makes light of the dangers of prolapse of the iris after operation, he says he never has to perform a secondary iridectomy for prolapse, and attributes this to the avoidance of atropine and the use of a corneal incision, he states that he does not find the healing of the wound delayed in consequence of the incision being corneal.

In one case I observed that he had much trouble in delivering a large hard lens, this appears to me to be a difficulty inherent in markedly corneal incisions, and I observed that he met it by making the counterpressure with the upper knife-handle very far back on the globe (a useful hint, when with any form of incision one finds the lens tending to rotate). Sbordone has recently published his experience of 702 cases of extraction with 674 good, 17 medium, and 11 bad results.

March 20th—Visited the "Naples institution for the congenitally blind." Such institutions appear to be common in Italy, this one was largely dependent on charity, but was, I understood, also assisted by the local municipal funds.

The system of instruction comprises three main branches (1) general education (for children and new-comers), (2) music, and (3) arts and trades.

In the first branch children are taught to describe objects they feel, to imitate sounds they hear, to read, write, do arithmetic, etc., this branch is managed on the usual lines and calls for but little comment. The children seemed happy and contented and were very well cared for.

In the musical department a large number of instruments are taught and a very high grade of excellence is reached. I came across 'the blind band' performing outside my hotel one night, and have no doubt that visitors give freely to the performers and so help to keep the institution in a prosperous state. One of the inmates (an adult male) was taking up pianoforte-teaching as a profession, his execution was very brilliant.

The trades-branch turns out admirable work, the principal trades taught and practised being weaving, carpentry and matmaking amongst the men, and crochet and lace-work amongst the women.

A blind-deaf-mute (congenitally afflicted) read off a long sentence *tapped on his hand* by the superintendent, and then wrote it down (on one of the special instruments used in this institution) in dot-cipher, the sentence was next handed to another blind man, who, by the way, was a

graduate of the local university, and who read it off correctly and rapidly.

The founder and superintendent of the institute, who most kindly conducted me round, appeared to be in very friendly touch with the inmates, and indeed the same applied to all the attendants. There was an air of 'Home' throughout the place, and the arrangement for the comfort of the blind were most carefully superintended. There were 84 inhabitants, and the working expenses in 1900 were £1,700—by no means a heavy figure.

Rome, 24th March 1902—Visited Professor Businelli's clinic. It is an old, poorly-furnished building, adapted to its present use. Businelli, like all Italian ophthalmic surgeons has a large experience in blepharoplasty for ectropion. The great frequency of the latter condition in Italy is ascribed to destruction of the lids and neighbouring skin by infection with anthrax.

One was shown a large number of photographs of cases, before and after operation, as well as a few cases under treatment. The results seemed excellent.

Granular ophthalmia also figures largely in Italy, but the patients seem to come under treatment earlier than in India, with the result that fewer bad sequelae are found than is the case with us.

Businelli operates for cataract without iridectomy. In two of his cases I noticed marked upward displacement of the pupil shortly after operation.

This hospital (as indeed every hospital I saw in Italy) was liberally supplied with all kinds of ophthalmic instruments, both those for diagnosis and those for operation or treatment.

Rome, March 29th & April 1st—Visited the Ospedale Ottalmico Provinciale (Superintendent, Professor Scellengo), the new Government hospital, built five years ago, the floors and walls are of handsome glazed tiles, all furniture is of aseptic types, and the instruments of all kinds are thoroughly up to date. The corners and angles of the walls were however not rounded.

Colour vision is tested by means of a number of dainty little worsted balls which the subject is made to pick out of a flat box with a pair of forceps, in order to match any given colour.

Students are taught retinoscopy on a very ingenious artificial eye, which can be elongated or shortened to produce any required amount of error in either direction. After the result has been obtained by the student he can verify his results by looking at the image of a distant flame placed in front of the eye and projected on a ground-glass screen at its back. If his correction has been accurate, the image is sharp, and *vice versa*.

A stereometer was in use for testing and automatically recording the power of any given glass (sphere or cylinder). It is a purely mechanical instrument, very simple and speedy in use, and said to be extremely accurate.

Professor Scellino, like all the Italian surgeons I met, performs the simple operation for cataract. He has the distinction of always making a *downward* section, which like Sbordone he keeps well in the corner. Out of 32 cataracts he performed in this hospital in 1901, 29 were successful, one was retained as relieved, and two failed. He makes his first dressing on the third day, and then dresses daily, using atropine instillations as a routine measure at every dressing. He admits four or five prolapses in every 100 cases, the small ones he leaves alone, the large ones he treats with secondary iridectomy; he freely admits that the second operation is most hazardous, he believes that it is much easier to deliver through a downward than an upward section.

Taking his various hospitals together he does about 100 cataract operations per annum.

Scellino is a firm believer in the value of peritomy for obstinate cases of pannus. He treats his cases of chronic granular ophthalmia by free irrigation with $\frac{1}{1000}$ perchloride of mercury, and pours this solution out of a glass vessel shaped like a small coffee-pot, thus obtaining admirable lavage.

He uses leeches freely in acute iritis, and setons in sub-acute forms of the same affection, especially, I understood, in traumatic or post-operative cases.

In his O P room he has carried the system of coloured tickets for various commonly used medicinal applications, to a fine art, and thereby much time is saved.

Both he and Businelli are opposed to Mules' operation.

March 31st—The ophthalmic institution of the Church of Charity well repaid a visit. It is an O P practice supported solely, as its name implies, by the congregation of a single church. It is generously equipped and is carried on the most modern lines. Though there are no beds, Dr Neuchler does a large number of operations here, including blepharoplasty and operations for ptosis. He is the only Italian surgeon I met who talks English. With one exception all the others spoke French fluently.

The features of Italian eye-surgery that strike the Indian medical officer most are probably—

(1) The very general preference for the simple operation for cataract.

The Italian surgeons show a tendency to make light of the dangers of prolapse of the iris, which attends this procedure.

(2) The prevalence of granular ophthalmia, with at the same time a comparative rarity of its graver sequelæ.

(3) The large demand for blepharoplasty.

R H ELLIOT, FRCS, CAPT, IMS

Reviews.

Legal Medicine in India and Toxicology.—

By Major COLLIS BARRY, IMS, FRSE, FIC, Chemical Analyser to the Government of Bombay, and Professor of Chemistry in the Medical College, &c. In 2 Vols Vol I Bombay, 1902 Thacker & Co., Ltd.

IN our recent special medico-legal number we referred to the list of publications by Indian Medical Service officers on the subject of Medical Jurisprudence or Legal Medicine, and the volume now under review is a worthy successor to those which have gone before.

Major Collis Barry, IMS, by his long association with the work of the Chemical Analyser's department in Bombay, and with the chairs of Chemistry and Medical Jurisprudence in the Bombay Medical College is eminently well fitted for writing such a book. The work, the preface tells us, was originally undertaken to supply a text-book for the students in the Indian Medical Colleges, but as the work grew, it was found impossible to adequately deal with this large and important subject in a small volume, so the present Volume I is published and a second volume, to follow soon, will give a large number of illustrative cases.

It will thus be seen that the present book and more especially when the second volume is published, is admirably adapted to the needs of the Civil Surgeons in India, and to them we can strongly recommend it.

The first chapter deals with medical evidence, and gives a brief account of the courts in India and the procedure adopted in a legal enquiry. Then follows a good section on evidence in general and on medical evidence. Under the heading "Privilege" it is noted that "according to British Law, the claim to professional secrecy is disallowed. A medical witness is therefore bound to disclose, if called upon, any secret entrusted to him in the course of his professional duties." On the other hand in special cases, "No public officer shall be compelled to disclose communications made to him in official confidence, when he considers that the public interests would suffer by the disclosure" (I E A, sec 124).

Chapter II deals with the signs of death and is very complete and well put together. The next chapter deals with putrefaction, and we note that the author accepts Coull Mackenzie's observations as to the early formation of adipocere in India.

The next chapters on modes of death and on identity are also good, and Chapter VI on age gives a full account of the law of India on criminal responsibility, and quotes all the sections of the Penal Code bearing on the matter.

A table for the eruption of the temporary and permanent teeth is given, which is practically

the same as that given by Mann and Vivian Poore, but differs in certain important respects from that given by Powell in our medico-legal number (p 234) Dixon Mann's table of ossification and junction of epiphyses is also quoted.

The chapters on rape and unnatural offences are also good, as are also the ones on pregnancy and abortion.

We need not go over all the chapters in the book, those on legitimacy, infanticide, deaths due to criminal violence, are equally good.

The sections dealing with hanging, suffocation and the questions of medico-legal importance which may arise are very fully and clearly dealt with. The sections devoted to insanity and kindred questions are also clearly written and reliable and fully illustrated by cases quoted and references to the Indian Penal Code.

The second part of the book is given to Toxicology, and will be found very satisfactory. The legal bearing of poisoning is discussed and the Penal Code sections quoted.

Indeed, it may be said that the chapters on poisons are all good, all poisonous substances, vegetables, or mineral, new or old, common or rare, are described fully and clearly.

The plates are very good and well reproduced, and for some of them the author is indebted to Lt-Col Kirtikar, I.M.S., author of the well-known '*Poisonous Plants of Bombay*'.

In conclusion, we have much to praise in this admirable volume. We can commend it to Civil Surgeons and Assistant Surgeons in India as a full, clearly-written and reliable guide to legal medicine. We hope the second volume will soon follow, meanwhile we congratulate Major Collis Barry and the Bombay Medical College on its production. We would be glad to see more books of this class produced by the Professors in our Indian Medical Colleges.

Public Health and Preventive Medicine —

By C J LEWIS, M.D., and ANDREW BALFOUR, M.D.,
Edinburgh, Wm Green & Sons, 1902

THIS handsome volume is one of the most original treatises on Hygiene that we have ever read. It is primarily intended, the preface tells us, for the use of men reading for the D.P.H., but there can be no doubt it will prove useful to all medical officers of health and Sanitary Officers.

The subject of Preventive Medicine is given a prominent position, and much space has been devoted to vital statistics and to sanitary law.

In no volume on the subject with which we are acquainted is the information given in such a condensed, concise, yet clear and complete manner. The matter in the book in other hands might well have expanded into several volumes, for this relief the reader should be thankful, and indeed in spite of compression the searcher for information will seldom or never be disappointed.

The book does not purport to be a laboratory manual, and all but the necessary details of such work are rightly omitted, for they can well be obtained in any of the excellent laboratory handbooks in use.

The first part of the book deals with medicine in relation to public health, under the following headings, (1) communicable or infective diseases, (2) parasitic diseases, (3) diseases of occupation and (4) disease of alimentation.

The writers have absolutely discarded the obsolete terms "contagious," "miasmatic," &c, and they state the method of transmission of disease as follows, (1) aerial, (2) alimental, (3) fomital, (4) telluric, (5) corporeal, (a) direct (b) indirect. The communicable diseases are divided into epizootic and non-epizootic, as for example glanders and enteric fever respectively. Then come "Other Communicable Diseases", under which we find berri-berri, cholera, diphtheria, dysentery, epidemic dropsy, influenza, malaria, leprosy, &c, &c.

Each disease is then concisely discussed under the headings, geographical distribution, etiology, cultural characteristics of germ, staining, &c, description, types, &c, differential diagnosis, mortality, incidence, age, sex, climate, season, &c, method of transmission, prevention of origin, and spread.

The accounts given of the various diseases will be found accurate and thoroughly modern, with references to the most recent literature. A series of admirable coloured plates well illustrate the appearances of the organisms of the chief diseases.

The parasitic diseases are well and briefly described, and on page 77 is given a formidable table of all the known parasites of man. The illustrations of the various worms and their ova are satisfactory. The sections on occupational diseases, and the diseases of alimentation are also good.

The next section deals with meteorology and follows usual lines, the remarks on acclimatisation are sound, and Berillon's influences preventing rapid acclimatisation in new isothermal regions are quoted.

Among the other chapters which on reading we noted to be particularly good were those on building construction and sanitary engineering, and sanitary law. The latter chapter only indirectly concerns us in India, but the medical officer will find many hints of value to him in the chapter on the erection of healthy houses and on the ventilation and warming of houses, and in the section on the construction and arrangements of hospitals, sanatoria, schools, workmen's dwellings and slaughter-houses. The plans of several large hospitals are given, in fact these chapters are extremely well illustrated. Nor should the chapter on vital statistics be overlooked, it treats a difficult subject in a clear and comprehensive manner. Perhaps, on the

whole, the weakest chapters in the book are those on water-supply and sewage disposal, but they are good in comparison with those in other text-books we know. The fact is the subjects are big ones and perhaps the chapters have suffered from compression,—in the attempt to mention everything sufficient detail is not given on several important subjects, e.g., the account of the biological processes of sewage disposal is good as far as it goes, but it is not enough for one who wants to know the subject thoroughly, and the pronouncement on the fate of "pathogens" in the effluent is rather vague, though perhaps not vaguer than our knowledge.

On the whole, we can very strongly recommend this volume. In our opinion it is superior to any of the single volume treatises on hygiene. For the student for the D.P.H. it is especially adapted, but it can also be recommended as a reliable book of reference to the civil surgeon and sanitary officer in India.

The get-up of the book is good, it is well printed, not too big, and the illustrations good and sufficient.

The Official Indigenous Drugs of India.—

By KARTIC C BOSE, M.B. Calcutta. THE BENGALESE CHEMICAL AND PHARMACEUTICAL WORKS Co., Ltd. Price, Re 1. 1902.

THIS little handbook contains a concise account of the chemical constitution, physiological action and therapeutics of the indigenous drugs which have in 1900 received official baptism in the Indian and Colonial Addendum to the British Pharmacopœia.

One of the most useful portions of the little book is the list of vernacular names for the various plants. These names were not given in the official Addendum to the British Pharmacopœia, and hence many well-known drugs remained unrecognized, e.g., though many people know that the *babul* is *acacia arabica*, yet we venture to think that few would recognise *palash* under the name *butea frondosa*, or *guluncha* as *tinospira cordifolia*.

It is a thousand pities that when men write books advocating the use of indigenous drugs that they do not take the trouble to give original experimental or clinical evidence as to their supposed virtues. In this handbook as in most others we have seen, on the subject of indigenous drugs this is not supplied, and authors seem content to copy more or less verbatim the pious opinions recorded as to the value of various drugs in Dr Watt's great "Dictionary of Economic Products."

While we make this criticism we, at the same time, can honestly commend Dr Bose's little book to all who are interested in the drugs of India, or who wish to make trial of these drugs, which have been adopted into the British Pharmacopœia with such haste and without any

thorough research into their traditional and reputed value.

We would welcome an account of a well-conducted series of trials of a few of these drugs, tested clinically and with due controls. So far these trials are not forthcoming, and we hesitate to recommend the use of these drugs on the grounds merely of a more or less ill-assorted and traditional mass of views and opinions about them.

A Veterinary Pharmacopœia of Bazar Drugs

—By T. D. E. HOLMES, M.R.C.V.S., Assistant Bacteriologist, Muktesai Laboratory Madras. HIGGINBOTHAM & Co. 1902.

THIS small book is an attempt to show the value of Indigenous Drugs in veterinary practice.

There can be no doubt of the need for a book of this description. Owners of stock, horses or dogs will find much that is of value to them.

A most complete table is given of the various drugs, with their common, botanical, and vernacular names. The latter are given in Tamil, Telugu, Canarese, Malayalam, Hindustani, and Dukni languages, and these names are printed not only in the vernacular characters, but also in Roman, so that one can at once learn the name of a drug in the district one may happen to be without being able to read the vernacular characters.

This table occupies 51 pages, and is followed by seven pages of useful prescriptions for colic, congestion of the liver, coughs, constipation, diarrhoea and dysentery, dropsy, fever, indigestion, parasites, &c.

The following rule is given for regulating the dose in various animals, horse 1, cattle 1½, sheep and goats ½, dog ¼. "The dog requires the same dose as for the human subject."

Useful tables of weights and measures are given, and the treatment of the commoner diseases is briefly described.

Then follows a description of the bazar drugs with their scientific and vernacular names and their therapeutic use, 200 drugs being thus described.

We can strongly recommend the pamphlet to our readers. It must prove useful to owners of dogs, horses or cattle.

MEDICAL SOCIETIES

PORT BLAIR MEDICAL SOCIETY

At the opening Meeting of the above Society the Senior Medical Officer, Captain E. E. Waters, I.M.S., read the following paper on—

THE CARE OF THE CONVICT

GENTLEMEN,
My first duty is to thank you for the honour you have done me in electing me as your President. I trust that our meetings may be of much profit to ourselves and to the convicts under our charge, and that we may be able to add some small contribution to the ever increasing sum of medical knowledge.

We are glad to welcome among us this evening Sir Richard Temple and the other officers of the Settlement, and we hope that from the wealth of their knowledge and experience they may aid us materially. We shall at all times appreciate their opinions and advice, and by a combination of our forces we may arrive at that happy mean which most makes for progress.

Just a few words as to the aims of our society. We have in Port Blair convicts from every part of India and Burma. These men are here, all for long terms, and many of them for life. They are under our immediate control, and their medical histories are known and recorded. Amongst all these men almost every variety of tropical disease occurs, and it appeared to me a matter for the greatest regret that such valuable material and experience should be wasted.

As to the title I have, perhaps rashly, chosen for my paper, it must appeal to all of us. The care of the convict is our daily work, the everyday interest of our lives. When the sick rate goes up, public works must stop, unremunerative expenses increase and there is trouble everywhere, whilst with an improvement in the public health, buildings can progress, forest operations become possible, and even the Cellular Jail may approach completion.

What is the material with which we have to work? Convicts sent to Port Blair are long term prisoners, between the ages of 18 and 45, and certified by a medical board in India as physically fit to perform the ordinary duties of labouring convicts. Our business as medical men is to keep these convicts in such a state of health that they may be able to perform their daily task of remunerative labour, and to prevent them from becoming a burden to the community.

First, as to the barracks in which the prisoners live. We see every variety, from the so-called temporary building of the stone quarries, to the new barracks now being erected on Ross. A certain floor area is laid down by regulations, and this, if strictly adhered to, is generally sufficient. The model barrack should be raised at least eight feet from the ground, and be on an open breezy site. There should be good natural drainage of the area round the building, and particular care should be taken to render the ground floor of the barrack as impervious as possible. On no account should pools of stagnant water, half empty tins or barrels, rubbish heaps or overgrown vegetation be allowed in the vicinity, the most stringent cleanliness must be enforced.

It has been experimentally proved that the higher from the ground men sleep, the less disease occurs. In other words, the rate of incidence of disease varies directly with the height above the ground. The inference follows that on no account should men be allowed to sleep on the ground floor under a barrack.

I need say little about overcrowding here. Tubercle, one of our most fatal diseases, is fostered in overcrowded barracks, and evidence is accumulating to show that epidemic cerebrospinal meningitis is largely excited under similar conditions.

Let us now consider the question of food. Roughly speaking if the average diet of any country be analysed, it will be found to have a fairly constant chemical character. Whether it be the beefsteak of the Englishman or the *dal* *bhat* of the Indian brother, every diet has the same five constituents, proteins, carbohydrates, fats, salts, and water. These must be present, or life cannot be sustained. Wherever a definite ration has to be laid down these primary constituents must be arranged for in prescribed quantities in order that the body may perform its functions. The fault of a prison or institution dietary is its absolute lack of variety; it may be physiologically correct, but it is terribly monotonous. Every thing is arranged to scale, so many ounces of carbohydrate, so much proteid, so much fat. Were the human body a simple machine requiring only to be fed with a stated amount of fuel to produce a definite quantity of work, this fixed dietary system would be an excellent one. But being human, complex and living, there must be variety in order to preserve health. We all insensibly vary our own diet from day to day in accordance with our health, our work, or our inclination.

It is essential, then, that we should give our prisoners as varied and as nourishing a diet as possible, and as our limits of variation here are very small the minutest care must be taken to ensure quality, food cooking and cleanliness.

One of the most important points is to see that the food is issued hot. Up till quite recently it was the practice here to take the rice off the fire three or four hours before the time of issue. As a natural consequence the convicts received a cold, indigestible mass of rice, with a modicum of half warm *dal*. It is now accepted that to keep a body of men in health and fit for their duties, whether the men be soldiers on the march, or convicts working far from their barracks, their food must be issued at or near the place of work, and the food must be issued hot.

Careful cooking of the *chupatties* is also essential. Unless well looked after, many *chupatties* are issued cold, heavy, and sodden. It is much less labour for the cook to make thirty

large *chupatties* than sixty small ones half the size and of better quality.

Dal supplies a large portion of the nitrogenous element, and also gives us the readiest means of varying the diet. Natives in their own homes vary their *dal* with the season of the year, and we cannot do better than follow their example. It is extremely important that the *dal* selected be well ripened and well cleaned, all the immature, badly husked supplies should be rejected. After being thoroughly cooked the *dal* must be pounded and passed through wire gauze strainers of fixed gauge. This ensures the rejection of all the husks and at the same time permits the passage of every thing that is nutritious and of value.

Equally important is the Vegetable Supply, for it is on this ration that we depend to prevent scurvy. Some vegetables as you know, have more antiscorbutic value than others. The potato, onion, plantain and sweet potato are of great value, whilst the many varieties of *sago* are of much less value, and the pumpkins, cucumbers and squashes are practically useless. Unfortunately, the better vegetables are difficult to grow and grow slowly, whilst the poorer ones grow rapidly and luxuriantly here. The only practical method is to combine the good and medium quality vegetables in stated proportions, carefully excluding those that are of no value.

Water borne diseases are happily unknown here—certainly the more severe forms like typhoid and cholera are never seen.

I suppose that nowhere is so much care taken with the water supply as in Port Blair. The water is boiled systematically and thoroughly, and the results are excellent.

There is, however, one source of danger. Wherever two supplies of water exist side by side, one potable and the other non potable, a great risk arises that careless water carriers will draw water from the impure supply in order to save trouble. For this reason, ceaseless watch must be kept over the water, and I think that all wells of doubtful reputation should be provided with a cover and padlock. In that way only, can the issue of water be kept under proper control.

So much for the convict's house, his food, and his drink,—his clothing remains. In a climate such as obtains here, warm clothing is not of particular importance, but the blanket coat is a necessary for the rains. It should be issued before the rains begin and not in the middle of the rainy season. As an auxiliary to the blanket coat, I consider the blanket cummerbund of much value, especially to men who have at any time suffered from dysentery. But, as in the case of the blanket coat, it is one thing to give a convict a warm garment, and quite another to make him wear it.

Drying rooms are another necessity here, for a weakly man to get wet through is bad enough, but for that man to have to spend days and nights in damp clothes is encouraging sickness. It is a pity too that personal cleanliness is not more popular; ringworm, a parasitic skin disease, is very common, and this is mainly spread by dirt, and by infection and re-infection from dirty clothes.

I wish now to consider the prisoner in disease as we have considered him in health, and first I propose to take up the subject generally, and then discuss some of the more important illnesses in detail.

Now what is the great index of health used in every jail and asylum in India, in every institution of any importance in England? It is the weight of the prisoner. Is the man going down hill, is he gaining or losing weight? Those of us who have worked in Indian jails know well the importance attached to the losing weight register. We know how carefully every man is weighed, how all those that have lost an appreciable amount are paraded before the medical officer, and an attempt made to ascertain the cause of this loss. From a medical point of view, the importance of a regular systematic weighing cannot be over estimated. A man's recorded weights act as beacons in his medical history, they are fixed points from which our deductions may be drawn. As to the medical signs which need no subjective tertiary node are objective signs which need no subjective explanation, so a gradual loss of weight is a similar sign pointing to some diseased condition, whose cause has to be discovered and with regard to which subjective symptoms cannot be.

Let me give an example.—One of the first *post-mortems* I performed here was on a man whose weight at the end of December, when discharged from the convalescent gang, had been 112 pounds. When re-admitted to hospital in April his weight was 81 pounds, and as may be imagined, he died within a very few days. This man had lost 31 pounds in three months, and the cause had never been enquired into—it had never come to notice. Now, had that man been weighed regularly his illness would have been detected, he would have been sent to hospital, and possibly been alive at this day. Important as weighing is from a medical view, it is equally important from that of the executive

Sickness does not pay and any means preventing sickness is of value. It is possible that, at first weighing might cause a few more admissions, but such men would have a shorter stay in hospital than if forced to carry on to their limit. Surely, it is better to have ten men in for a week in the spring than have those same men in for a month later on, of that proposition the present condition of the police is a conclusive proof.

So much for weighments—I wish now to mention the acclimatization of new arrivals and with it the question of change of occupation.

In making enquiries as to the excessive sick rate this year, I am often told that the physique of the new arrivals is not what it was. On looking into this, I find that the death rate of new arrivals has steadily increased, so that of all the deaths occurring here, twenty per cent are of convicts under one year's service—this means a loss by death to the Settlement of eighty young, healthy men per annum.

I have not yet gone thoroughly into this matter, but it certainly appears as if we could do something. I should like an opinion from the executive officers as to whether some process of acclimatization is not possible. Some districts are distinctly more unhealthy than others. Could not arrangements be made that no convict of under one year's service be sent to these stations? It may be difficult to do this, but are the lives and labour of a hundred men not worth some effort, and would not the actual money saved be considerable?

Associated with this question is that of change of occupation. Is it necessary to keep men for indefinite times in unhealthy places? Hope is essential for all of us, it is recognised that you cannot keep men indefinitely in cellular confinement, but a man is killed just as surely by continued labour in the firewood gang as by continued cellular confinement. Here, again, the difficulties are enormous, and at first sight insuperable, but something may be done to remedy this. In the table appended to this paper, you will see how the sickness has varied from year to year, and how much it has increased of recent years. The strength of the labouring convicts has increased in the last eight years by about nine hundred, but the deaths and admissions to hospital have increased out of all proportion to this figure. In 1896 there were altogether 214 deaths, 6,262 admissions for malaria, and 64 deaths from dysentery. In 1899 there were 452 deaths, over 13,000 admissions for malaria and 176 deaths from dysentery—and these latter figures are being approached in each successive year.

Of all the diseases that afflict us here, malaria in its many manifestations is by far the most important. Sixty, seventy, and even eighty per cent. of our total admissions are put down to malaria and diseases of malarial origin. In the last three years there have been 38,516 admissions and 127 deaths from malaria alone, while if dysentery be included, the admissions rise to 43,230, and the deaths to 561.

What this means in pecuniary loss to the settlement, it is not easy to say, but assuming that each man admitted to hospital was ineffective for seven days at each admission—a very moderate estimate—then in the last three years these two diseases cost you the labour of ten thousand men for thirty days, over seventy five thousand rupees in wasted labour alone, not to mention the five hundred and sixty deaths, it is surely worth while making an effort to reduce this.

We are all nowadays official adherents to the mosquito borne theory of malaria. From the brilliant investigations of Ross and other members of the Indian Medical Service, there appears to be no doubt that the mosquito is one great factor in causing the spread of malaria, and therefore, if we can exterminate the mosquito, we ought to banish malaria.

Is it possible to abolish the mosquito in Port Blair? Practically, I don't think it is. We have such a heavy rainfall, such an abundance of fast growing tropical vegetation and outlying stations are so deep in the jungle that mosquitoes will always be with us. But there is not the least doubt that even here they can be enormously diminished.

You have all been worried to whitewash barrels, to burn oil smelling pastilles, to clean out drains and clear away stagnant pools and rubbish. The trouble has been great but I have had most encouraging reports of these measures. Viper Island has abandoned mosquito nets. Aberdeen Station cannot find a mosquito larva and even Goplakabang reports an enormous improvement.

If then we have diminished mosquitoes we have minimised new infections, but we have not touched the relapsing cases. If a man has once been thoroughly infected with malaria any severe exposure, extra strain, or long continued exertion may bring about a relapse of a former attack. It is not a new infection, but a sudden lowering of body resistance that has allowed the liberation of parasites hitherto locked up in the spleen and other glands.

How then we are to diminish malaria and its effects? I have already indicated the lines on which we should work. They are as follows—

Strict sanitation of barracks and their surroundings—Fortunately, measures taken to reduce mosquitos are also general sanitary measures of the greatest value.

Secondly—The provision of mosquito nets in notoriously unhealthy localities. We have carried out a small experiment with nets in the female jail, and the results are distinctly encouraging.

Thirdly—The subjecting of the prisoner to as little unnecessary strain as possible. By this I mean the avoidance of extra tasks, the provision of good warm food close to the work place, and care about blanket coats and dry clothing, in short, provide intelligent supervision, and put the convict under conditions which will keep him in the best possible health.

If malaria causes the most admissions to hospital, dysentery causes the most deaths. Close on forty per cent of the total mortality here is from dysentery. Now, if malaria is a disease of mosquitos and jungle, dysentery is a disease of jails and public institutions. In many English lunatic asylums, dysentery is very common and fatal, but there it passes under the name of ulcerative colitis, proctitis or some other pseudonym, the name of dysentery is never mentioned.

In Indian jails and hospitals, dysentery is a communicable long continued disease of specific origin, specially prone to attack subjects broken down by malaria or exposure, and requiring long and patient treatment to effect a cure. It is very apt to recur, the least excess, chill, or improper food being, sufficient to set up a fresh attack. Here, again, preventive measures are most called for, and they are in the hands of the executive authorities. The great secret in the treatment of dysentery is promptness—no case of dysentery, however slight, should be neglected. Immediate admission to hospital, rest, warmth and proper diet would save many cases that now, by delay, are lost.

The stay in hospital must always be a lengthy one, and must be followed by a period in the convalescent gang. No man is fit for general duty after an attack of dysentery until he has regained his normal weight and has been at least a month under observation.

My own belief is that malaria is a very largely a predisposing cause to jail dysentery, and that as we diminish malaria our dysentery will diminish, but that is far too contentious a point to raise now.

Taberle (or in other words consumption) is very violent here, perhaps more violent in proportion to the number of cases admitted than any other disease.

During the last eight years there have been 610 cases of phthisis and 421 deaths, and of these, 346 cases and 227 deaths have occurred in the last three years. This gives a case mortality of close on seventy per cent which is about the same as plague. The disease is becoming more widely distributed, and can now be found wherever it is looked for.

We all know of the intense interest that is being taken in England nowadays in the prevention of consumption, and it behoves us to attempt something here. Every phthisis patient is a centre of infection for those around him, every time he coughs he brings up myriads of bacilli, which when dry may float about, attack any one of us, and cause an almost certain death.

The danger is a real one, for a man attacked with consumption in Port Blair rarely lives for six months from the time the disease declares itself, and eighty men are dying from this cause every year.

What are we to do against this? As elsewhere the best result will be obtained by the executive and medical branches helping one another. The executive authorities must recognise that the disease is largely preventable, that it is "catching," and that it may be checked by free ventilation, by avoidance of overcrowding, and by prompt removal of phthisical patients from situations where they can infect others. Every man they suspect of illness should be sent to hospital for examination. It would take very little time and might not only prolong the patient's life, but save many others from infection. The medical officers must realize more than they have hitherto done the vital importance of early and careful diagnosis. All cases of men losing weight must be investigated, and the fact that a man has a rise of temperature must not always be taken to mean that he has malaria. Each medical officer must be a means of disseminating knowledge on this and kindred important subjects. The laity do not and cannot realize the importance of the early treatment of phthisis, and it rests with the profession to instruct them.

In addition to early diagnosis, it is essential that there should be a separate special hospital in which our phthisis patients may be treated and watched, and for this hospital, I am glad to say, we shall not now have long to wait. This hospital should be complete in itself, with a separate hospital staff and with every appliance for the systematic treatment of the disease.

It is on these lines that we must work, and it is by these means that we may hope to diminish the heavy sickness and mortality rates from pulmonary disease.

Such, gentlemen, is a superficial review of my subject. I have of course been able only to outline the plan on which I think we should work. Many of the points I have raised are controversial and have to be considered as much from the executive side as from the medical. I have also tried to put before you the financial side of sickness, to show how expensive illness is, and to point out how sound an investment preventive medicine may be. From your united experience—for I hope each one of you will speak to night,—some good must surely come, and if we succeed in doing good we shall uphold the traditions of our profession and not have worked in vain.

Colonel Sir Richard Temple—Wished first to express his thanks for being elected an Honorary Member of the Port Blair Medical Society. He wished further to express his appreciation of the honest and fearless manner in which the work of the medical department was carried on.

With regard to convict diet, he thought that the food of the working classes in India was extremely monotonous even more so than among the prisoners. He admitted the importance of weighing the convicts regularly indeed a system of universal weighing was introduced 8 years ago in Port Blair, but it was found that owing to the lack of skilled free supervision the weighments became untrustworthy

tory cases required long and careful supervision after their discharge from hospital, and they were not immediately fit for hard labour.

He also called attention to the milk supply and to the increase of phthisis.

Assistant Surgeon Sanyal B.A., M.B.—Thought that more care should be taken in the selection of convicts in India before they were sent here. He cited a case in which a leper convict was sent here who immediately on his arrival required admission to the Leper Ward, where he died within a few months. Weekly men were of no use to the Settlement, they only swelled the mortality list.

Lieutenant W. C. Long, I.M.S.—Though that money expenditure in promoting the health of the convicts was of prime importance, malaria, phthisis and dysentery all required expensive measures. Dysentery cases required long supervision, early admission to hospital, and minute care with the food.

He wished to add his support to what Captain Waters had said in his paper.

Assistant Surgeon Dutta, L.M.S.—Considered that further extension would be required for the Phthisis Ward. By early examination and the use of the microscope, cases were being diagnosed sooner than before, and consequently more

TABLE
Vital Statistics, Port Blair, for the last 8½ years

MEN OF LESS THAN ONE YEAR'S SERVICE			Year	Total admissions	Total deaths	MALARIAL FEVERS		DYSENTERY		DIARRHOEA		PULMONARY PHTHISIS		Ulcers	Injuries	Net strength	Total strength
Year	New arrivals	Deaths				Admis- sions	Deaths	Admis- sions	Deaths	Admis- sions	Deaths	Admis- sions	Deaths				
1895	900	36	1894	15,241	230	7,251	44	791	55	911	41	30	23	596	1,357	7,020	10,419
1896	1,206	31	1895	16,905	289	9,561	53	833	81	999	46	32	25	653	1,373	7,653	10,259
1897	1,210	34	1896	14,199	214	6,262	23	725	64	624	15	63	40	1,270	1,004	7,855	10,520
1898	1,095	38	1897	17,723	239	9,607	32	952	99	472	12	56	46	1,349	1,540	8,311	10,590
1899	1,220	101	1898	15,303	272	7,721	31	1,079	100	431	16	75	60	1,059	1,639	8,648	10,917
1900	1,205	70	1899	21,873	452	13,730	34	1,855	176	432	31	116	86	685	1,639	8,025	11,390
1901	1,568	81	1900	23,609	411	13,844	57	567	112	80	2	100	69	916	2,193	8,430	11,594
1902	*	51	1901	20,505	411	11,451	36	1,993	146	611	25	131	81	977	2,160	8,883	12,206
			*1902	11,850	252	7,493	31	1,043	85	392	17	93	50	484	932	10,713	12,822

* Six months

NOTE.—Sudden increased mortality in 1899, falling in subsequent years but again tending to rise

NOTE.—1 Large increase in number of deaths in 1899 and following years

2 Large increase in deaths from dysentery and phthisis

3 Steady increase in number of injuries

4 Net strength eliminates self supporters, they furnish little sickness or mortality

and were soon neglected. He thought that something might be done at the larger stations, but to weigh all the convicts was impracticable.

Referring to the working of prisoners in unhealthy districts, Colonel Temple pointed out that there were great difficulties in securing change of occupation men of indifferent characters could not be employed on Ross and in other stations where the climatic conditions were better, and these men must be sent to the distant and less healthy places.

He appreciated the work that was being done to combat malaria, and he was prepared at a later date to introduce a scheme on a larger scale to deal with the disease.

He thought Captain Waters and the Medical Officers were apt to be too considerate to the dysentery cases. Many a free man had to work immediately he got over an attack and had no opportunity of resting in a convalescent gang. It must not be forgotten that convicts came to a penal Settlement to work.

In conclusion Sir Richard said he would do his best to help the Medical Officers to improve the health and sanitation of Port Blair.

Assistant Surgeon Choudhury, L.M.S.—Recommended that regular monthly weighments by overseers should be introduced. He did not agree with Colonel Temple in thinking that the ordinary working class diet was monotonous. Dysen-

accommodation would be required. He thought that a hospital of 100 beds would be necessary.

Captain E. E. Waters, I.M.S.—In reply pointed out the manner in which natives varied their diet by altering the kind of *addi*, and went on to say that good food and careful cooking would be rewarded by a larger outturn of work. He again laid stress on the care required in the after treatment of dysentery, and said that no one who had examined the intestines of patients died from dysentery would hesitate to keep such patients away from hard labour for a considerable time.

With the usual vote of thanks the meeting then dispersed.

ANNUAL REPORTS

THE SANITARY COMMISSIONER'S REPORT, PUNJAB

IN this year's report the sanitary and vital statistics of the districts now forming the N.W. Frontier Province do not appear.

In spite of the fact that plague broke out in the Province with great violence in the end of 1901, yet, as there was no

repetition of the terrible malarial fever outbreak (see *N* 1901, p. 101) of the autumn of 1900, the death rate from all causes fell no less than 10 per mille (to 36.1). Fluctuations of this sort show the difference between a malarial and a non malarial year. In 1901 the following were some Provincial death rates —

Bengal	31	per mille	Madras	21.3	per mille
U Prov	30.3	" "	Assam	27.8	" "
Bombay	37	" "	C Prov	25	" "
			Punjab	36	" "

Following the unhealthy autumn of 1900, the birth rate of 1901 showed a decrease, viz., 35.4. This is a decrease of 5.7 from the mean ratio of past five years. Other birth rates are —

England (10 yrs)	30.3	Assam	44
C Prov (1901)	23.4	U P	41.3
Madras (")	25.1	Bengal	38.5
Bombay (")	25.2		

The effect of the previous unhealthy autumn on the birth rate of the subsequent year is well shown by the following figures — Ferozepore and Hissar in last quarter of 1900 had the appalling death rates of 189 and 127 per mille per annum, and nine months afterwards the birth rates were only 14 and 20 per mille. The fever abated early in the new year, and the result is shown nine months later with birth rates in the same two districts of 51 and 68. This is not an exceptional fact, for returns kept in the Sanitary Commissioner's Office show that, in the Punjab, the annual fever season in autumn means fewer conceptions and fewer births nine months later. In the Punjab 110 males were born to 100 females. Out of the total number of deaths in the year (726,611) no less than 25 per mille or 70 per cent of the total mortality is due to fever. Cholera was practically absent, plague, in spite of its virulence, only caused 2 per cent of the total mortality, and dysentery and diarrhoea 2 per cent. As usual, the last quarter was the most unhealthy, there were more deaths in these three months than in the seven from February to August. It is a remarkable fact that in most parts of the Punjab the Hindus had a higher death rate than the Mohammedans.

Turning now to the chief diseases it is satisfactory that the bad cholera epidemic of 1900 ceased, and in 1900, the Punjab enjoyed an almost complete immunity from it—only 180 deaths against 24,840 in the previous year. As illustrating the fact that the introduction of the specific virus is only one factor in a cholera outbreak it may be mentioned that in the municipal town of Jagadhri 3 cases occurred among returned pilgrims from Hardwar, yet only 36 cases in all occurred in the course of two months.

Small pox was not severely prevalent, yet the rate was 306 deaths per million of the population compared with 5 per million in England (in 1899). As usual, small pox was highest in May and lowest in October. Kangra "the best vaccinated district in the Province" was practically free from small pox.

Plague.—The following extract shows the rapid rise of plague in this Province —

"Owing to the rapid increase in the infected area and the strong opposition of the people to plague regulations, it was found impossible to continue the enforcement of compulsory measures. In consequence of the abandonment of cordon arrangements in October 1900, but chiefly on account of the relaxation of all compulsory measures some months later, there was an enormous increase in the mortality from plague during the year 1901. In the district of Jullundur, the deaths rose from 417 in 1900 to 3,877 in 1901 in Hoshiarpur from 43 to 2,395, and in Gurdaspur from 35 to 4,325. Of the newly infected districts, Drilok, adjoining Gurdaspur, had 3,695 deaths, Ludhiana 429, Lahore 180, Umballa 154, Ferozepore 8, Amritsar, Gujranwala and Jhelum 1 each. Altogether there were not fewer than 14,959 deaths recorded from plague in 1901, as against only 495 in the previous year."

The seasonal rise and fall of plague is well illustrated in 1901, few cases in January and February, steady increase in March and April, sharp rise in May, a minimum mortality in August and increased virulence in the last three months of the year. The sudden outburst at the end of the year coincided with, and in the report is attributed to, the abandonment of compulsory measures. The increase in May was probably due to the unusual coolness of that month. Captain Wilkinson F.R.C.S., I.M.S. the Chief Plague Medical Officer, states that, in 1901, the majority of cases were of the bubonic type. This officer also gives it as his opinion that "the information obtainable pointed in nearly all cases to infection of villages being due to human intercourse, either direct or through the medium of clothes or other property. In no instance could proof be obtained of infection having been introduced by rats though in many villages large number of dead rats were observed before the disease had spread."

Fever.—There was a great falling off from the mortality of the great autumn outbreak of 1900. In six districts the falling off amounted to no less than one lac of deaths. We

note that there were 49 cases and 29 deaths from cerebro spinal Fever in Mung Rasul Jail from 15th April to 17th November 1901. There were also cases in one regiment in Delhi, and probably more existed unrecognised among the general population.

We are glad to see that attempts are being made to combat malarial on modern lines. The history of plague in the Punjab is dealt with in a separate report.

THE TRIENNIAL VACCINATION REPORT, BENGAL

MAJOR H. J. DYSON, F.R.C.S., I.M.S., who submits the Triennial Vaccination Report for Bengal for the years 1899—1902, comments upon the great disadvantages his department had on account of the frequent absences of and frequent changes of the Deputy Sanitary Commissioners.

The figures totalling the number of vaccinations done in the Province show a steady and gradual progress. The average work done by a vaccinator has increased. In 1901 2 the increase in the number of operations is unprecedented.

As regards infant vaccination, the estimated number of infants under 1 year was 3½ millions, and of these in the past year 234 per thousand were vaccinated—a substantial increase on 156 per thousand in the previous triennium. This figure (234) is based upon an arbitrary and imaginary birth rate of 50, whereas, if 38 per mille the actual recorded birth rate be taken, the protection of infants is 320 per mille. This however is below the average of other Provinces. The inequalities in districts are remarkable and are explained on various grounds.

The following extract from Lt Col D. G. Crawford's report on the Hooghly District is quoted by the Sanitary Commissioner as it is believed to correspond to the views of many Civil Surgeons.

"I believe also that the number of infants under one year of age vaccinated is really somewhat greater (probably by five to ten per cent.) than appears in the returns. Infants from nine to twelve months are vaguely stated to be one year old, are entered as one year old, and so appear in the returns among children from one to six years, instead of among infants under one year. * * * It is desirable that all the children born should be vaccinated. But in the absence of compulsory vaccination, no one has any power to insist upon all, or half, or any of the children under one year of age, being vaccinated. The matter rests entirely with the people themselves. They do not themselves bring forward young children for vaccination, the vaccinators cannot insist upon them being vaccinated, much less perform the operation forcibly against the parents' will, and the result is, that most of the young children remain unvaccinated. So it has always been, so it is, so it probably always will be. The vaccinators find the older children, from one to six years, outside their houses, and operate upon them, the parents not actually wanting the operation done, but not, as a rule, making any particular objection. Therefore, the great majority of vaccinations are always among children from one to six years."

"It may be thought from the above, that I would advocate the general introduction of compulsory vaccination into rural areas throughout Bengal. Far from it. I think that such a measure would be ill advised. The Government has not at present got and does not seem likely to have, sufficient staff to supervise such a measure. I believe that compulsory vaccination, universally introduced, would either remain a dead letter, or would do more harm than good, the evil caused by the harassment to which the people would be subjected being far greater than any good that would be done in diminishing small pox."

"The only way in which a measure of modified compulsory vaccination might be introduced, so as to work satisfactorily, would be, as far as I can see, somewhat as follows: to give power to the District Magistrate to declare any area in which small pox was prevalent infected with small pox, and by such declaration to introduce compulsory vaccination and re vaccination, temporarily, and over a limited area. Such an area might be a village, a municipality, a group of villages, a thana or more than a thana. The time for which it would be necessary to keep compulsion in force would be the time which it would take to thoroughly vaccinate and re vaccinate the infected area, the larger the area the longer the time. The expense of such a measure would have to be met by the District Board. And the fact that the Magistrate, who puts the measure in force, would have in his capacity, as Chairman of the Board, to find the funds to pay for it, would be sufficient safeguard that such a measure would not be introduced without real necessity."

Re-vaccination also shows an increase and the percentage of success is given as 61 per cent., which we take to be correct, as it closely corresponds with the results of re vaccination among adult convicts in jails, where the results are usually accurately registered.

The returns show a large increase in six puncture vaccination.

It is a pity that the elaborate diagrams given on page 5 of the report have not been commented upon.

It is not easy to draw conclusions from them without elaborate study, moreover the lines indicating small pox deaths and protection by vaccination should be in different colours. It does not, however, appear that a high rate of protection runs *pari passu* with a low rate of small pox, but the fact is that the ratio of the protected population is in most districts still so small that there is ample room for small pox outbreaks when the virus is introduced.

The Sanitary Commissioner draws the attention of Government to the inadequacy of the present supply of lymph. The sanctioned Vaccine Depot in the Duihanga District has not yet been started, and the necessity of another depot in Orissa is impressed upon Government.

The Sanitary Commissioner concludes his report with some strong remarks upon the unsatisfactory state of the Vaccination Department. The vaccinators have to work under many disadvantages, and they depend for their pay on the fees realised. These fees in many cases are not realised, and there is no special way of compelling the payment of the fees.

The result is naturally enough, the vaccinators try to work in areas where fees are most easily obtained.

The Sanitary Commissioner recommends the introduction of the Compulsory Vaccination Act in refractory areas (as suggested by Lieutenant Colonel Crawford), the appointment of paid Government Vaccinators and a superior class of men as Inspectors.

We are glad to see that a training school for vaccinators has been started in Cuttack. This is excellent, for in no district in Bengal is illegal inoculation more rife.

Government is not yet convinced that all that can be is being done to promote vaccination in the districts, and till more is done, Government is not disposed to try a Compulsory Act. We look forward with interest to the results of the proposal to substitute paid for licensed vaccinators.

THE REPORT OF THE PRINCIPAL CIVIL MEDICAL OFFICER, HONG KONG, 1901

Dr J M ATKINSON, V.B., D.P.H. the Principal Civil Medical Officer, Hong Kong, has submitted a very interesting report on the working of the Medical Department of that Colony in 1901.

Dr Lawson, who became well known in connection with the plague in Hong Kong, has returned to Hong Kong, having been absent for some time owing to illness contracted on plague duty in India and elsewhere. We also note that the services of Lieut. Stewart, I.M.S., were lent to Hong Kong up to 27th July 1901. A table is given showing the good effects of the prophylactic use of Quinine in 15-gr doses, as advocated by Koch. Fifteen grains are given on two successive days, then none for five days. We have already borne testimony to the good results of 15 gr doses twice a week, in preference to smaller doses more frequently.

We note that there was an epidemic of Dengue in Hong Kong, probably, it is said, introduced from Singapore. Many cases at first were confused with influenza, till the initial and terminal skin eruptions were noticed. From many cases a rod shaped bacillus was obtained from the peripheral blood, the bacillus had rounded ends, one or two parts staining darker than the rest, in only one case a growth was obtained on glycerine agar, which inoculated into a guinea-pig produced death in 18 hours, and from the spleen and heart of the guinea pig similar bacilli were obtained.

The following notes on Malaria Fever are extracted in *extenso* on account of their interest—

"Malarial Fever—803 cases have been treated as against 674 last year. All were diagnosed by microscopical examination of the blood, and the results are—

Malignant (Malignant Tertian) and	
Estivo autumnal	86 30%.
Tertian Simple	8 21%.
Quartan Simple	1 12%.
Mixed infection	4 35%.

Table XII gives the varieties met with during each month of the year. It will be seen that malaria prevails all the year round, but less in the dry winter months. This is probably due to the fact that we never get any long spell of cold weather, even in the coldest months, hot summer like days intervening.

Also it is rare that the hill streams completely dry up so that the mosquito never dies out.

CEREBRAL MALARIA OR MALARIAL COMA

Six cases of this nature were admitted with three deaths, in none was the temperature high, in other words, this form of malaria infection does not at any rate here produce hyper-

pyrexia, the highest temperature being met with in those suffering from simple tertian.

APAREXIAL FORMS OF MALARIA

These are difficult to explain on the theory that it is the liberation of the toxins when the spores sporulate which produces fever.

We had at least six cases during the year, where malarial parasites were found in the blood, but there was no rise of temperature. Three of the six were suffering from the malignant type, one had mixed infection, simple tertian as well as the malignant, and there were also two cases in which quartan parasites were present without any fever, in one of these two the parasites were sporulating.

Malaria seems to complicate most of the diseases met with here. This is not to be wondered at when it is remembered that nearly every one contracts malarial fever, and it is an undoubted fact that given one attack of malarial fever any illness or injury which reduces the vitality of the patient predisposes to a return of the malarial parasites in the blood, e.g., during the year nearly every patient's blood was examined microscopically, and Dr Bell found the following results—

"Dysentery—Out of 101 cases 68 showed the presence of malarial parasites.

Phthisis—Out of 65, parasites were found in 35 cases, in many cases of phthisis the fever is malarial as on the administration of quinine, it frequently subsided.

Enteric Fever—13 out of 25 gave malarial parasites.

Liver Abscess—3 out of the 6 cases showed the presence of malarial parasites."

Under the heading "Anti malarial Measures," we read of systematic filling up and draining of pools, and we note that the results of using *Celli's larvicides* were not satisfactory as anopheles larvae persisted in spite of them, and kerosene was found more effectual, but Dr Atkinson shows that the only real remedy is to drain the nullahs.

The results of experiments with mineral oils on mosquito larvae are herewith given—

"The results were as follows. *Snowflake*—On adding one teaspoonful to 1½ gallons of water in a circular vessel teeming with larvae, we found that they were all dead in two hours.

Comet—Under the same conditions no larvae were dead in two hours, although they were much less active, in 10 hours they were all dead.

300° Mineral Colza—A few of the larvae were dead in two hours, several alive after 24 hours. On adding a tablespoon full instead of a teaspoonful to the water, the following results were obtained—

Snowflake—All the larvae were dead in ten minutes.

Comet—About same effect as a teaspoonful of *Snowflake*.

Colza—A number alive after six hours.

Snowflake is much more destructive than *Comet*, it also spreads more rapidly on the surface of the water, with the *Colza* the oil does not spread so well on the water.

One tablespoonful of *Snowflake* was tried in a water run round a cross bed, and all the larvae sank within 5 minutes.

In stagnant water *Jeyes fluid* is by far the most effectual larvicide, one teaspoonful to 1½ gallons of water with the same surface as was used before killed the larvae in 2 minutes.

Twenty drops in the same quantity of water killed them all in six hours, it also has this effect that it kills all the larvae in the water, whereas the oils only kill those on the surface, it is useless in running water, as it mixes with it and does not float on the surfaces.

To show the difficulty there is in ridding certain neighbourhoods of this colony of anopheles, I would refer to the extensive operations carried on in the spring of last year at the Military Sanatorium, Magazine Gap, at the suggestion of Dr Young, a Civil Medical Officer attached to the China Expeditionary Force, to free this place of malarial fever.

Two hundred men of the Indian Regiment were detailed to carry out the necessary work under Dr Young's supervision, the hills were cleared for a distance of 300 yards of all brushwood and undergrowth, several bogs were drained, and the anopheles pools in the nullah were filled up.

Notwithstanding all these measures, however, fever was so prevalent there in the autumn months that the station had to be vacated by the troops."

In the appendix a case is given of "liver abscess due to malaria," the malarial origin being deduced from the fact that malignant quotidian parasites were found in the blood, though in a paragraph quoted above, it is recognised that malaria complicates most diseases met in Hong Kong.

Another curious case is "malarial colitis simulating appendicitis" in which the malarial nature of the complaint is surmised because numerous ring formed parasites were found.

An interesting case of recovery from general paralysis is recorded in the case of a German sailor.

Correspondence.

THE INTRODUCTION OF VACCINATION INTO INDIA

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In a late communication to you by Lieut Col D G Crawford, I.M.S., I find that whilst he was able to give the Madras Presidency the credit of being the first to employ vaccination, he has not been in a position to secure records that would show by whose enterprise this was brought about. The following extracts from a memorial to the Government of Fort St. George by Swamy Naick, the first Chief Native Vaccinator in this Presidency, when attempting to secure a pension at the end of fifty years' service, may be of interest to Lieut. Col Crawford and others. It may be assumed, in the absence of mention of any special Medical Officer's name by Swamy Naick, that the introduction of vaccination to India was one of the several great services this country received at the hands of Lord Clive. It is also obvious that by directing that operations should be conducted in his own garden, he put his whole personal influence into advancing the interests of vaccination. I may state that evidently the "Chief Native Vaccinator" held a position that commanded confidence and respect, as Madras Black Town has still memories of his existence in a street named after him. The "Presidency Depot" (at first apparently known as the "Vaccine Hospital") at Chintadripetah, is still employed by the Madras Municipality, although in a few months, owing to the completion of a Central Vaccine Institute now under erection by the Madras Government for the supply of the whole of the Madras Presidency with preserved animal lymph, it is probable it has been its last days. This memorial shows that Lord Clive after successfully inducing the people to adopt vaccination, established the Vaccination Department of this presidency, which, therefore, now reaches its one hundredth year of existence. This new century will, I am glad to be able to say, judging by recent orders of Government, see not only an allied Vaccine and Bacteriological Institute, but also a radical reorganization of the department that will bring it in line with modern requirements. It is interesting to note that "cow pox inoculation" was met with passive and active opposition of much the same character as attends efforts to introduce anti plague inoculation in the present day—

"That in the year 1802, your Memorialist was strongly recommended to the notice of the Right Honourable Lord Clive, by Drs Anderson, Messrs Gahagan, Berry, and Major Wilks, the Town Major, and Mr Cecil Smith, who were fully acquainted with your Memorialist's zeal, integrity, and assiduity in the public service, for the purpose of examining, and effecting the benevolent design, of his Lordship, in introducing the cow pox inoculation at the presidency, and in his Lordship's Gardens, from the matter which had been received from England, and appointed Dr Dalton to co operate with your Memorialist in this important duty, in consequence of such appointment, your Memorialist was induced to give up his garrison duty.

"That the hazard and expense and other obstacles your Memorialist encountered with, during the first progress of the Cow pox Vaccination, from the natural prejudice, the inhabitants in general entertained towards this beneficial operation, together with their mistaken notions and veneration for the small pox, were very serious and very considerable. And further, the operation of the cow pox being altogether novel and an innovation, as well as totally unknown in this part of the world, the principal inhabitants of Madras, and the neighbouring out-stations looked upon the undertaking with very suspicious notions, and apprehended that the English Government intended to introduce something which would tend to prejudice their religion, and other Hindu systems of worship.

"That in 1802, when the system of vaccination was first introduced, under the immediate control of the Right Honourable Lord Clive, and in his Lordships' own gardens the inhabitants in general felt the utmost reluctance to be entertained in the service as vaccinators, labouring under the above notions of prescription, and notwithstanding all the persuasions your Memorialist could have used, to induce them to alter their mistaken notions, they treated the subject as ridiculous, and peremptorily refused to be employed, in the vaccine branch of duty, which his Lordship was well acquainted with.

"That upon such obstinate refusal on the part of the inhabitants, your Memorialist was under the necessity of employing several of his relations, and other dependants to carry on this laudable undertaking, gratuitously, for a period of six

months during the time the vaccine matter was under trial in his Lordship's gardens, without any obstruction, or inconvenience to the public service.

"That pending the trial of the vaccine matter, a serious danger occurred to your Memorialist, while employed on this branch of duty, and which was well known to his Lordship, your Memorialist with certain of his assistants, proceeded to the Black Town of Madras, for the purpose of vaccinating the children of one Mr Dysila, and others, after performing this duty, and while your Memorialist and his people were returning, they were most wantonly attacked by a number of Airmen, and other inhabitants who were ignorant of the beneficial effects of the cow pox, and cruelly assaulted, on which occasion your Memorialist's ear was rent of the ornament attached to it, lost or stolen away from him, whereupon the aggressors were tried before the Quarterly Sessions, and convicted of the offence.

"That after the genuine vaccine matter had fully succeeded at his Lordship's Gardens, the Right Honourable Lord Clive (now the Earl of Powis) was pleased to form a regular establishment of vaccination, and appointed Dr Horsman to the Superintendency of the Department, on which occasion his Lordship was pleased to appoint your Memorialist as Chief Native Medical Practitioner under Dr Horsman, and from his having been the chief promoter of the establishment of cow pox, in this part of India, and being fully competent to give satisfaction to the inhabitants, and explain to them the benefits of inoculation, His Lordship was pleased to present your Memorialist with a pair of golden bangles with a suitable inscription (from the Right Honourable Lord Clive, &c, &c, &c, to Swamy Naick, Native Medical Practitioner, in token of his Lordship's approbation, of his personal activity in extending the benefits of inoculation) and a riding horse, and strongly assured your Memorialist, that provided the reports of your Memorialist's superiors, continued to sanction that countenance and support from his Lordship, he had no doubt that Government should feel happy to support your Memorialist's endeavours, and grant him suitable rewards for his zeal and fidelity.

"That in the year 1803, Dr Dalton was appointed to the charge of the Provincial Court of Anee, when he proceeded to Anakavoor Travatoor, and there erected a tent, for the purpose of effecting the operation of inoculation, but the weavers and other inhabitants of the district, with a strong sense of prejudice, attacked the tent of that gentleman, and destroyed it to pieces, and otherwise maltreated him, and prevented him, from carrying on the operations with a belief that it prejudice their cast and religion, upon which occasion, Dr Dalton sent your Memorialist, and deputed him to carry on the operation among the prejudiced natives by kindly persuading them and clearing their minds of all manner of prejudice, which they might entertain towards this antidote, and to explain to them the beneficial effects attending inoculation. Having given these directions to your Memorialist, Dr Dalton returned back, whereupon your Memorialist immediately proceeded to Natarce, Doose, Maumindoor, Travatoor, Vandewash, Moosaravakum, Dammul, Conjeeveram, Travellore, Tripassore (where the same accident occurred to Dr Pichaid).

"That your Memorialist further begs to submit to the consideration of your honour in Council, that with the view of perfectly establishing the genuine vaccine matter of cow pox it was his usual practice from time to time to make a trial whether the genuine vaccine virus had fully succeeded or failed, on which occasion, the Superintendent of Vaccination directed your Memorialist, to make selections from amongst patients who had been vaccinated, from one to ten years back, and make the necessary experiments upon them, but in this the inhabitants obstinately refused to comply until your Memorialist was induced, for the good of the public service, to produce his own children, and previously perform the operation upon them with the variolous fluid taken from a patient dangerously labouring with the small-pox with the view of clearing any doubts, which might remain upon their minds.

"During the period, your Memorialist arrived at Walaja bad from his official tour of inspection through the Jaghies and the Zemindars, and observed a great uproar in the cantonment, whereupon your Memorialist immediately halted at that station, and succeeded in vaccinating upwards of 3,000 sepoys within the short period of one month under the immediate orders of the Adjutant-General who was then present, and thereby putting a final stop to the further progress of this disease.

"In consideration of these weighty duties of your Memorialist, the Medical Board recommended to Government that an assistant be allowed to your Memorialist to assist him in his duties, together with an allowance of 20 pagodas a month, to defray the expense of a palankeen, but Government with its usual liberality and in approbation of your Memorialist's long servitude, and a general good and correct conduct, voluntarily presented him a palankeen, bearing a

suitable inscription (this palankeen is the gift of the Honorable the Governor in Council to Swamy Naick, Native Doctor, in testimony of the high sense that the Madras Government entertain of his useful service in the cause of vaccination), together with the usual allowance of 20 pagodas per month to defray the charges attending the same which bounty of the British Government he is happily enjoying.

"That amongst the number of those individuals who have been vaccinated by your Memorialist amounting to 777 772 males and females up to the 30th September 1902, no one has been infected with the contagion of the small pox at Madras or at any of the outstations.

"Your Memorialist's particular and careful duty was to preserve the genuine vaccine fluid, and to keep it always in a complete state of perfection, and when applications were made from any of the out-stations by sea or land, or from such places where no vaccine establishment is fixed or where it may be fixed, for a fresh supply of genuine matter, the seals from having lost their supply, it was the especial duty of your Memorialist, to select matter and seals of superior quality, and having carefully packed them up in a parcel see it duly transmitted by post, until it fully succeeded at those places, and further, whenever the medical officers of the presidency required genuine matter for the use of the children of gentlemen of this populous settlement, it was the duty of your Memorialist to select and send them good and real subjects possessing genuine matter, and your Memorialist did further with great difficulty, and with the utmost trouble procure children and forewarn them to Boncoolen Java Ohma, Isle of France Bourbon, and different other sea coast under charge of vaccinators to diffuse and transfer the matter from each patient while on board the ship, whereby fresh matter may reach those places.

"That previous to the establishment of vaccine inoculation at the Presidency, some two thousands of lives were annually sacrificed to that dreadful distemper, the small pox, and since the commencement of this beneficial remedy in 1802, multitudes of people from Madras, and the several out stations had undergone this useful operation."

Received from England a gold snuff box, with the following inscription, presented to Swamy Naick Chief Native Practitioner as a token of regard from his faithful friend Alexander McKenzie A.M., M.D., F.R.C.S., Edin., Superintendent-General of Vaccination, Madras 1807—

"The undermentioned is the inscription on gold bangles, presented to him from the Right Honourable Lord Clive etc., etc., to Swamy Naick, Native Medical Practitioner, in token of his Lordship's approbation of his personal activity in extending the benefits of inoculation.

"This is to certify that Swamy Naick, Native Vaccinator, was employed under me at this place in the Government Gardens in establishing first the small pox inoculation, and afterwards the vaccine and also in proving the vaccine to stand the test of small pox inoculation and infection, and that he conducted himself throughout the whole with honour to himself and fidelity to the Government in every respect.

"(Signed) J. DALTON

"This is to certify that the bearer, Swamy Naick, has been employed under me during the period I conducted the inoculation in the Garden of the Right Honourable the Governor, Lord Clive, for the space of six months much to my satisfaction, having also proved himself worthy of a Diploma from the Medical Board as an Inoculator."

(Signed) J. DALTON

Yours, &c.,

W. G. KING,

Lt Col, I.M.S.

Sanitary Commissioner, Madras,

THE USE OF BETELNUT AS A CAUSE OF CANCER IN MALABAR

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR—Finding that a great deal of interest is now displayed in investigating the cause and prevention of cancer and that bacteriologists are hard at work isolating the micro-organism, I venture to write to you the following, hoping that it may be of some service to those who are interested in the investigation.

It must have been noticed by any and all of the medical profession, who had the chance of working in the various districts of the Presidency that cancer is a great deal more common in Malabar than in any other districts. Close study of the cases has led me to the inference that cancer of the mouth is confined to those who chew betelnut. It is a

habit that I have often seen among betelnut-chewers in Malabar to keep the chewed substance under one or other side of the mouth. But this habit is not confined to the people of Malabar, and, therefore, it is open to the question why the disease should have found a better nidus in the Malayalese in preference to other nationalities.

I have to believe that the difference in the constituents of the betelnut would explain to a great extent the cause of such a difference, being, that irritability is one of the immediate causes of cancer.

It will be noted that in all districts except Malabar the usual ingredient that goes into the composition of betelnut are betel leaf (Piper betel) areca nut and lime, and in Malabar tobacco in addition and aromatic substances adding to the luxury of it. Lime that is used for this purpose in Malabar and other districts differ a great deal in the mode of manufacture and quality. In Malabar it is prepared first by cleaning shells of molluscs such as cockles, and rarely of oysters and snails, &c., and then slaking the product. The resultant is much more alkaline and caustic in character than the slaked lime that is used in other districts, and which result from slaking lime that was produced by cleaning chalk. Owing to the excessive alkalinity of Malabar lime when it becomes mixed with the oil of betel leaves in the process of chewing, a more caustic substance chavicol (Paraffin Phenol) is produced. This substance cannot be so easily separated from the oil of betel leaves if treated with lime of the strength that results from slaking calcined chalk. The tobacco when combined with the moist betel and nut must also bring out those powerful and equally irritant oils, alkaloids, nicotine and meatiline. And therefore the resultant from the betelnut "a la mode malabar" (Betel leaf, areca nut, slaked lime and tobacco) form a much more irritant substance than the ones from the betelnut of other people.

I believe the increased irritant condition, coupled with the peculiar habit of keeping the substance in one or the other cheek and the constant use of betelnut constitute the condition to generate a nidus in the cheek for the production of cancer. Excepting this no plausible cause do I find for the peculiar susceptibility of Malayalese to this disease in preference to people of other districts.

CANNANORE,

1st August, 1902

Yours, etc.,
A. P. BALA RAM,
Hospital Assistant

Service Notes

THE following is the list of medical officers on probation of the Indian Medical Service who were successful at both the London and Netley examinations. The prizes are awarded for marks gained in the special subjects taught at the Army Medical School. The final positions are determined by the marks gained in London added to those gained at Netley, and the combined numbers are shown in the list which follows.

	Marks		Marks
1. A. F. Barnardo	6,116	19. W. S. Patton	4,709
2. J. McPherson	5,063	20. W. L. Trafford	4,700
3. G. D. Franklin	6,709	21. B. B. Paymaster	4,690
4. J. H. Gull	5,584	22. N. W. Mackworth	4,672
5. J. Sims	5,472	23. H. Ross	4,653
6. C. A. Gourlay	5,413	24. I. Forrest	4,645
7. W. C. Ross	5,398	25. H. Crossle	4,603
8. R. A. Lloyd	5,283	26. L. L. Hirsch	4,579
9. J. C. G. Kunhardt	5,270	27. L. Randall	4,543
10. E. A. Walker	5,178	28. E. C. Maunsell	4,474
11. L. Cook	5,131	29. H. E. J. Batty	4,324
12. L. B. Scott	4,951	30. J. W. Illius	3,920
13. J. H. Morris	4,834	31. D. S. A. O. Keefe	3,851
14. G. I. Davys	4,816	32. J. P. Cameron	3,664
15. H. Halliday	4,809	ST. H. Gloster	4,250
16. G. C. I. Robertson	4,792	ST. H. G. Knapp	2,495
17. A. J. V. Rotts	4,782	ST. H. Horton	4,249
18. F. E. Wilson	4,722	ST. W. A. Justice	1,992

* Gained the Herbert Prize, the Parkes Memorial Medal, and the prize in Pathology presented by Surgeon-General Sir William Taylor.

† Gained the Martin Memorial Medal the Maclean Prize for clinical and ward work, and the De Chaumont Prize in Hygiene.

‡ Gained the 2nd Montefiore Prize of £7 7s.

§ Gained the prize in Pathology.

|| Gained the 1st Montefiore Prize of £21 and Medal.

¶ Gained the Marshall Webb Prize of £1 and Medal.

§ These four gentlemen had been on service in connexion with the plague in India, which explains the small number of marks credited to them.

At the last meeting for the distribution of prizes at Netley Lord Roberts spoke as follows —

'I have listened with great interest to the report which Colonel McLeod has just read to us, and am much impressed by his clear and convincing statement of the admirable work which has been carried on during the forty-two years the candidates for the Indian Medical Service have been trained at Netley. I can quite understand your regret that this is the last occasion on which prizes will be given away at Netley, but I suppose there can be no doubt about London being the most suitable place for a training school such as this, and I am sure that the authorities would not have made the change had they not been satisfied that it was necessary to do so. There is no profession which requires more careful training than the one you are about to enter, and certainly none in which constant study and research are so absolutely essential. Even in my recollection the advance that has been made in medicine and surgery is very remarkable. A few nights ago, I had the honour of meeting Lord Lister, and I could not help telling him how deeply indebted we soldiers are to him for his wonderful discoveries. Only those who know what a field hospital was like forty or fifty years ago can have any idea of what has been effected by the introduction of antiseptics. Operations are possible now which at that time could never have been contemplated. You are about to join a noble profession, and you will find there are grand openings in India for those who keep themselves up to date and are determined to get on in it. The Indian Medical Service is well paid, the pensions are good, and it affords opportunities in many and varied directions for men of ability and industry to come to the front and to achieve success and distinction. Time will not admit of my telling you of all the medical officers who have distinguished themselves in India, but there are a few whose names I should like to mention. To go back to early days there was a pioneer of the Indian Medical Service (Dr William Hamilton), who nearly 200 years ago, for his successful treatment of the Emperor Farrakshah, obtained a grant of land for his countrymen with free permission to trade. Then Frizer, Buchanan, and Barnes were distinguished as scientific observers, travellers, and diplomatists. Wilson, Sprenger, and Bellow were noted authorities in geology and palaeontology. O'Shaughnessy had a large share in organizing the Indian Telegraph Department. Paton greatly developed the Postal Department. Macnamara and Warden were eminent chemists. Russell and Jordon were great naturalists. Norman Chevers and Lyons were admitted authorities on medical jurisprudence. Brandis, Cleghorn, King (whose name will always be associated with the beautiful Botanical Gardens in Calcutta), and many others were noted botanists. The Goodereys, Ronald Martin, Birdwood, Cayley, Harvey, your own head here, McLeod, and many others that might be enumerated were, or are, eminent as professors and writers on medicine and surgery. De Renzy, James Cunningham and John Richardson will always be remembered as men who successfully grappled with the sanitary needs of a country in which sanitation is of vital importance. Mouat, Walker, Planck, Lethbridge, and others are identified with the excellence of the gaol system in India. Nor in such an "honours list" must the names be omitted of such men as Campbell, Mackannon, my old friend, John Campbell Brown, and Fayrer, whom I am glad to see here to day, and whose devotion to duty, I trust, you will all emulate. One other name I must refer to, the late Director General Robert Harvey, whose life was one long record of activity and usefulness. It was at his instance that the Government of India recently organized a "research department" for the investigation of diseases, thereby adding another and important attraction to the Indian Medical Service, and another grand field for inquiry, observation and discovery. I must not detain you longer. I have said enough to show you the unique prospects that are open to you, and it only remains for me to congratulate you all on the successful conclusion of your labours here, and to express the hope that in the large field which you are about to enter you will bring your best energies to bear, and will honourably maintain and, if possible, increase, the splendid reputation and the grand traditions of the service to which you now belong. Let me commend the natives of India to your special care and protection. I would advise you to lose no time in learning the language, and to do all in your power to cultivate the friendship of those people among whom your lot may be cast. You will be well repaid for any trouble you may take in these respects. There are many able natives in the lower grades of your own profession from whom you will obtain valuable assistance if you treat them with that kindness and courtesy which is their due, and which they know so well how to appreciate.

Sir William Taylor and Sir Joseph Fayrer added a few observations, and the Principal Medical Officer having expressed sincere thanks to the Commander in Chief and Lady Roberts for their presence, the proceedings ended.

It may be observed that in the above list of probationers at Netley the four plague medical officers who joined the service without the preliminary examination are placed below the batch of candidates who competed at the examination held in London in February last. We have been informed, but cannot vouch for the accuracy of the statement, that it was understood that these medical officers should be graded below the last batch at Netley, which was understood to mean the batch that had just left Netley, not the batch who would go to Netley after passing the next examination.

We are glad to see that two of the plague medical officers carried off two of the prizes at the Netley Course.

Netley full—Few of us who have passed a course at Netley will not read with regret that the army medical school there is no more. We never were enthusiastic over the curriculum at Netley, and a dozen or so years ago much of the time spent there was wasted. Of recent years and with changes in the professorships great improvements had taken place. The course at Netley had other advantages, especially in exciting a feeling of camaraderie among those who attended there. It might have been made much more useful, but we only hope that the new scheme will on the whole be as successful.

Our contemporary the *Journal of the Association of Military Surgeons United States Army* devotes in the July number an editorial to a discussion of the proper uniform for an Army Medical Department. Up till 1887 the Medical Department of the United States Army wore a caduceus on a half chevron of green. In 1887, upon reorganisation of the corps, green trimmings were adopted for the uniform, and the Geneva red cross was made the insignia of the new corps. In 1890, a shield was issued, and in 1894 a Maltese cross was substituted for it with a dark green uniform. It was then objected that green is the peculiar colour of a rifleman's uniform. It was also pointed out that some shade of red has marked the disciples of the healing art from earliest time, and we are informed that Baal Zebul (or the Beelzebub of the Bible) was "a god of medicine," and the garments of his priests were red. A more potent argument is that the medical departments of most modern armies are distinguished by facings of shades of the same hue. In Austria "the sanitary corps is marked by madder red, in Belgium and Great Britain the corps is indicated by magenta (or rather cherry colour), in Bulgaria they show facings of violet, and in Germany they glow with scarlet trimmings, in Mexico they may be located by their carmine ornamentation, while the Roumanian is appropriately distinguished by red." We suppose the red piping of the tunic of I. M. S. officers may come into the same category.

The article then goes on to advocate "the adoption of the same colour for the decorations of the uniforms of the medical service in all nations, because that military medical work is fraternal in character and a uniform colour would conduce mightily to the distinction of its members from the combatant service and greatly facilitate recognition by the suffering on the field of battle, and incalculably advance the efficiency of the service of aid in illness and injury."

The writer then proceeds—"The cross sacred by 1900 years of religious veneration, belongs to the Church, and its blazonment upon the banners of crusaders carries no right to its employment in a less pious campaign." The cross might logically enough form part of the uniform of the Church militant, the chaplain, but it has no special applicability to the Medical Officer. Moreover, the red cross upon a white brassard, by the terms of the "Geneva Convention," is already an essential part of the uniform of all non-combatants in actual warfare, and its multiplication in other forms during peace is highly objectionable." The article concludes as follows—

"The caduceus, on the contrary, has been the symbol of healing since long before Tradition gave birth to History. The great deities of Egypt, Isis and Serapis, symbolic of the healing powers of nature, in sculptured form, always bore serpents as the emblems of health, and sacred serpents were always nourished in their temples as living images of the great deities of which they were the recognized shrines. Passing over to the west and entwined about a winged staff, the serpents became a part of the magic wand of Mercury, the seat and source of his power, in his hand it could lull the wakeful to sleep or reanimate the dead. Thence thus

'caduceus, his snake wand,

With which the damned ghosts he governeth
And furies rules, and Tityrus tempereth'

was inherited by Esculapius, the demigod of the healing art, from whom it has come down in an unbroken line to the present day. It has its place and its signification, unvarying and constant in all languages and among all nations. Whatever tongue an enemy may speak, the caduceus never fails to

convey to him the idea of that help in the hour of need which it is ever the highest aim of the military medical officer to convey."

The suggestion then that the uniform of the United States Army medical department is to align itself with the medico-military ideas of the world by the adoption of masonic timings for the hospital corps and the employment of the caduceus as insignia of the medical department is indicative of a move in the right direction—significant indeed of the qualities symbolized by the caduceus itself wherein the rod signifies power, the wings zeal and energy, while the entwined serpents imply skill and wisdom—all qualities eminently demanded in the department of which it is proposed to make it the insignia."

This caduceus and cherry coloured facing have recently been adopted by the R A M O on their badge and on their uniform, but whether this was arrived at by a parity of reasoning with the above we are unable to say.

MAJOR C GIBBERT I M S, took over the civil medical duties of Hazara District, relieving Major A J Macnab, I R C S, I M S, on 1st August.

CAPTAIN J N WALKER, I M S, took charge of the civil medical duties of Kohat District, relieving Captain H M Cruddas, I M S, on 30th July.

THE *Journal of the Military Surgeons* U S A, has now become a monthly instead of a quarterly from the July number.

All medical officers of armies of other nations are open to Associate Membership. The subscription is five dollars, and this includes the Journal.

LIEUTENANT A G MCKENDRICK I M S, has passed the higher standard in Urdu.

CAPTAIN D MCCAY I M S, Medical Officer, 44th Gorkhas, holds civil medical charge of the Naga Hills District in addition to his own duties.

ON return from leave Major W L Price I M S, is appointed to be Civil Surgeon, Seoni, C P.

CAPTAIN A M FLEMING, I M S, is appointed to act as Civil Surgeon Chanda, C P.

SENIOR ASSISTANT SURGEON AND HONORARY LIEUTENANT WILLIAM EATES to be Assistant Surgeon, with the honorary rank of Captain.

FIRST CLASS ASSISTANT SURGEON ALBERT CAMBELL to be Senior Assistant Surgeon, with the honorary rank of Lieutenant, with effect from the 10th August 1902 vice Senior Assistant Surgeon and Honorary Captain William Thompson, retired.

WITH effect from 16th June 1902 vice Colonel J McConaghey, I M S, promoted, Lieutenant Colonel T H Sweeny, I M S, is appointed a civil surgeon 1st class and Captain G T Budwood, I M S, a civil surgeon, 2nd Class, U P.

ON the departure on privilege leave of Mr M S Emerson, Superintendent, Alipore Central Jail Captain J Mulvaney, I M S, acts as Deputy Inspector General of Jails, Bengal.

LIEUTENANT COLONEL GIBBONS, I M S, is appointed a civil surgeon, 1st class, vice Lieutenant-Colonel D G Crawford, I M S, on furlough.

LIEUTENANT COLONEL R H WHITEHEAD, I M S, is permitted to return to India and is expected out before the end of October.

MAJOR C H BIRCHALL, I M S, Chemical Examiner to Government, is granted privilege leave for 1 month and 4 days.

ON the reduction of the British Contingent, China Expeditionary Force, Colonel P F O'Connor, C B, remains on the staff as P M O.

HONORARY CAPTAINS ISAAC BURNS and JOHN HICKIE, I S M D, are permitted to retire.

MAJOR RONALD ROSS, C B, I M S (ret'd), has received a shower of recognitions of his distinguished researches on the transmission of malaria by mosquitos. Among the latest is the Cameron prize in therapeutics of the University of Edinburgh.

LIEUTENANT W LAISLEY, I M S, is appointed to the medical charge of 10th Jats vice Captain J J Bouike, I M S.

LOCAL ALLOWANCES ASSAM AND SIKKIM.—With reference to Article 416 Army Regulations, India, Volume I, Part I, the Right Hon'ble the Secretary of State for India has been pleased to sanction the following special local allowances to Captains and Subalterns on Military duty in the places named—

	Rs
Silchar	50 per mensem
Shillong and Dibrugarh	75 " "
Sikkim	60 " "
Manipur, the present allowance of Rs 75 is reduced to	50 " "

A amended order grants six months sick leave to Captain N R T Rainor, I M S, officiating Civil Surgeon of Chanda, C P.

LIEUTENANT R E LEOD, I M S, on relief by Captain J Gould, I M S, returned from the Coronation, is posted to the officiating medical charge of 2nd Bengal Lancers.

We regret to learn of the death of Lieutenant G B Butt, I M S, at Malakhand on 28th August.

CAPTAIN S H BURNETT, M B, C M, I M S, of the Bombay Medical Department, has been granted privilege leave for two months and 20 days, in combination with furlough for 12 months and 10 days, from the 13th August or any subsequent date from which he can avail himself of it.

Notice

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS Messrs Thacker Spink & Co, Calcutta. Annual Subscriptions to the *Indian Medical Gazette* Rs 12, including postage.

THE HARVEY MEMORIAL FUND

SURGEON GENERAL L SPENCER, I M S, has agreed to make inquiries and arrangements in London for the printing of a portrait of the late Surgeon General Harvey.

The following officers form the Local Committee of the fund—

Lieutenant Colonel Peck, I M S, Major D M Mou, I M S, and Major W J Buchanan, I M S, (EDITOR, *I M G*).

The following subscriptions are acknowledged—

	Rs
Already subscribed	2,552
Major Harold Hendley, I M S	16
Major J G Jordan, I M S	20
Lt Col Peters, I M S	50

Total received up to 30th September 2,638

BOOKS, REPORTS, &c, RECEIVED

British Crime Medical Annual
Collis Bury's Legal Medicine for India Vol I
Liverpool Tropical School Report
Jaipur Medical Report
Punjab Sanitary Report
Bengal Vaccination Report
Burma Medical Report

COMMUNICATIONS, LETTERS, RECEIVED FROM—

Major Carr White, I M S, Bhatnagar, Capt E E Waters, I M S, Port Blair, Dr Daniels, London. Lt Col Thompson I M S, Secunderabad. Major Moh I M S, Calcutta, Major Bedford, I M S, Calcutta. Dr Dodds Price Newry. Major Sutherland I M S, Saugor. Capt J Rogers I M S, Calcutta. Capt C Luer, I M S, Rangoon. Capt. W Fridmore, I M S, Bhamo.

Original Articles.

ELEPHANTIASIS OF THE SCROTUM AND PENIS

By R. D. MURRAY, M.B.,

LIEUT. COLONEL, I.M.S.,

Professor of Surgery, Medical College, and Surgeon to the Medical College Hospital, Calcutta

IN the *Indian Medical Gazette* for March 1901, the surgical treatment of elephantiasis of the external genital organs was exhaustively treated by Major Havelock Charles in a very able paper, and Lieutenant-Colonel J. Maitland of Madras contributes an excellent article on the same subject, in the May number following. In response to the latter's appeal to other operators in India to give their experience in the same field, I now send a brief account of the method pursued by me in dealing with the disease. It is practically the same as that described by Lieutenant-Colonel Maitland.

The affection is very prevalent in this part of India, as shewn by the large number of cases met with at the Medical College Hospital, and the bulk of our cases come from the districts of Burdwan, Bankura, Singhbhum and Midnapur, where laterite soil preponderates. It is likewise very common in Gaya, which has the driest climate in the Province, and while there, in 1890-91, I operated on 10 cases. I have not kept a complete record of all the cases I have operated on during my 26 years' service in Bengal, but I must have done considerably over 100. I have a record to the end of 1901 of 84 done at the Medical College in 3½ years, 10 at Gaya in 15 months and 1 at Chittagong in my early service—95 in all, with 2 deaths. One death occurred at Gaya in the case of quite a small tumour, owing to the negligence of the hospital staff who allowed the man, on the night of the operation, to bleed to the point of death without ever noticing it or reporting to me till the following morning, when his condition was past recovery. The other death occurred at the Medical College in 1900 from cellulitis. He was an old cachectic patient and most unfavourable for operation. One death was, therefore due to an avoidable accident and the other occurred in an inoperable case. After all, 2 per cent must be considered a low mortality when the magnitude and severity of the operations are taken into account. Dr. Kenneth McLeod, in his work on *Operative Surgery*, published in 1885, records 129 cases operated on in 5 years, with a mortality of 23 or 17.7 per cent., and an average stay in hospital of about 70 days. Fayrer's mortality was 35 deaths

in 193 cases or 18.2 per cent. McLeod lost 9 cases or 39.1 per cent from tetanus and 6 or 26.1 from septic diseases. Fayrer's figures from the same diseases were respectively 6 or 17.2 per cent and 15 or 42.8 per cent. With modern methods these dangerous sequelæ have now become a thing of the past. The largest tumour (Fig. 1) I have removed was while at Gaya. It weighed without fluids 82 lb. but with fluids it must have weighed quite 100 lb., for the tumour was enormous and almost touched the ground. It enclosed a double hydrocele, each containing a large quantity of fluid, and the serous drain from the elephantoid tissue during the operation was very copious. The contents of the tunical sacs rose in a fountain over our heads directly the knife punctured them. I regret that I omitted to weigh this patient before and after the operation, but I feel I am well within the mark in estimating the weight of the tumour before operation at 100 lbs. I published notes of this case in the *Lancet* for December 1891, as it was one of the largest ever successfully removed. The largest removed by me at the Medical College so far has been 60 lbs. I removed one at Gaya complicated with hernia which weighed 55 lbs. I have only once refused to operate, and that was in the case of an old broken down patient with a very large tumour which was suppurating and riddled with sinuses. The average detention of my cases in hospital has been from three to four weeks. I have generally grafted the penis about the 14th day, waiting until the granulations are well established and vigorous. Recently, taking my cue from Lieutenant-Colonel Maitland, I have been grafting the organ at the time of operation, and the result has been quite successful. One case, the second which I did in this way, was discharged on the 15th day with flaps united and the penis completely and firmly covered with skin. This is, I believe, a record (Fig. 3).

I generally keep the patient in bed for a week before operation, regulating his diet, attending to his bowels and getting him accustomed to his surroundings. In addition to the usual warm baths and general cleansing of the body, the scrotum undergoes repeated scrubbing with carbolic soap and lotion (1-20) before the final special sterilising on the evening before the operation with turpentine carbolic and strong perchloride. The bowels should be well cleared out by castor-oil and an enema prior to this cleansing. The greatest care and diligence must be observed in the preparatory washing, on account of the rough nodular surface of the tumour, full of pits and crevices, the bottom of which it is difficult for the brush and antiseptics to reach. This is especially true of old large tumours.

The exhibition of chloride of calcium I have found useful as part of the preliminary treatment. I have been struck with the small amount

of hæmorrhage and oozing during the operation in cases in which I have tried it

Operation—I operate with the patient at full length on a glass table, with a blanket and sheet interposed as far as the loins. The top of the table consists of two moveable heavy glass slabs, sloping gently towards the centre, where they are an inch apart. Blood and fluids escape through the slit into a trough or gutter underneath, which drains into a large receptacle at the foot of the table. This contrivance secures the greatest cleanliness and reduces the risk of sepsis to a minimum, as free irrigation can be kept up throughout the operation. Moreover, the patient is kept quite dry in a comfortable unstrained position, and there is no subsequent sense of muscular fatigue in the hips and legs, such as is apt to follow prolonged operations in the lithotomy position. There is also an advantage from the support afforded by the table in the case of very large tumours which, during removal in the lithotomy position, have to be supported by assistants to prevent undue dragging upon the neck of the growth and consequent strain upon the already relaxed and flabby spermatic cords. The trunk and limbs being at the same time swathed in blankets, when the weather is cool, all danger from chill from the glass table is avoided.

Except in the case of quite small tumours, I invariably use an elastic hollow cord, one quarter of an inch thick, to control hæmorrhage. I apply it double, and once round. I begin by passing it behind the lumbar region, its centre corresponding to the spine, and giving one end to my assistant to hold—usually the left—I take the other end, and, pulling forcibly, draw it diagonally across the pubis round the left side of the tumour into the anal sulcus and up behind over the right iliac crest. I then give this end to the assistant and seizing the left free end, pass it in a similar fashion around the right side of the tumour into the cleft of the nates and up behind over the left iliac crest. I next knot the cord across the pelvis. The neck of the tumour is thus firmly and securely encircled, and the circulation completely controlled. I have never known the cord when thus applied to slip, and dispense with tapes and rings as recommended by Colonel Maitland to prevent such an accident occurring. After the cord is applied I give the parts a final douche with 1–20 carbolic, and cover the pelvis and thighs with sterilised towels.

My first incision is a mesial one, commencing at the pubis, in healthy skin, and extending downwards towards the extremity of the penis. The incision is deepened by successive strokes until the imbedded organ is exposed, taking care not to injure its cellular sheath and the numerous large veins which usually course along it. The penis is then quickly separated with the finger from the elephantised tissue, and the

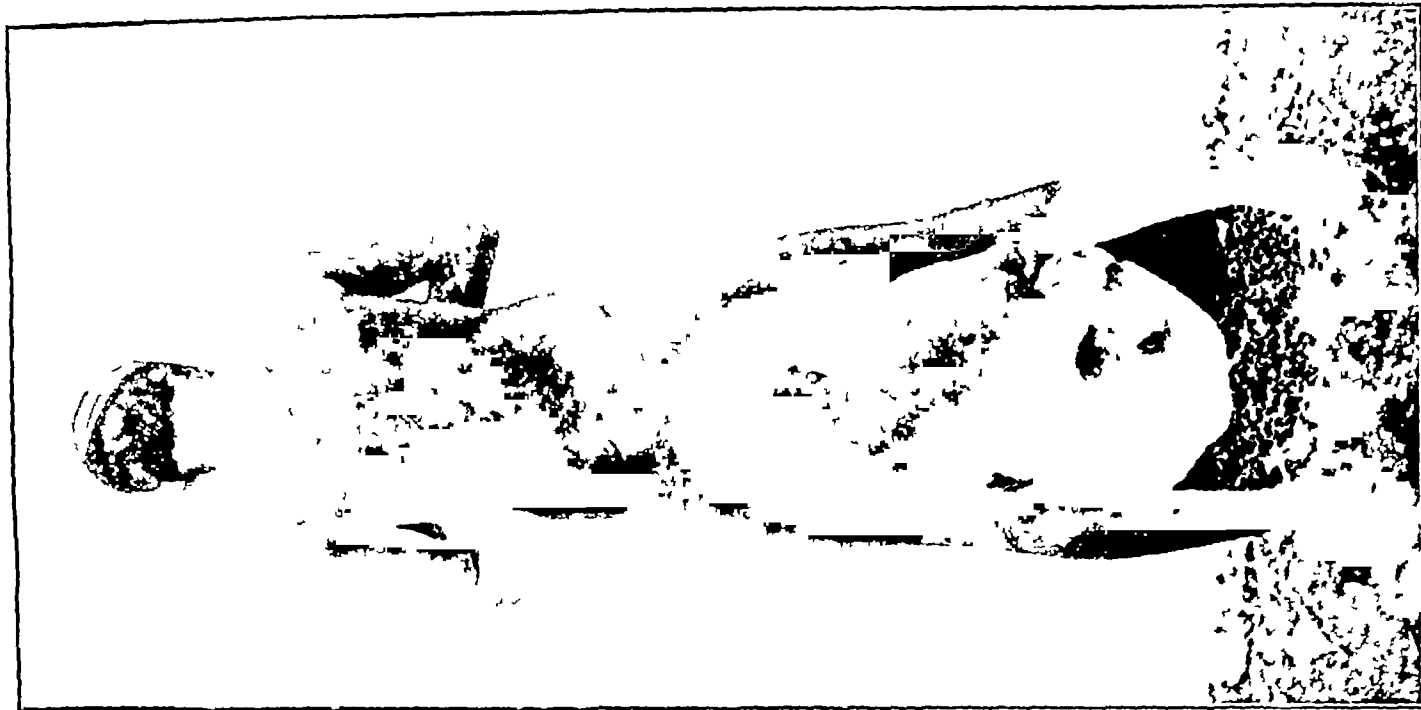
prepuce defined and cut across. The glans now presents, the prepuce is slit up mesially with scissors, all smegma that may be present being carefully douched away, with the patient on his side, to prevent the offensive secretion from contaminating the wound. The prepuce is then cut away or snipped with scissors all the way round close to the corona. I consider it a mistake to attempt to save the prepuce with the object of helping to cover the penis, as it is apt to become cedematous, causing a deformed and unsightly appearance and interfering with the functional utility of the organ. I next make a long vertical incision from near the external abdominal ring, in the axis of the cord and testis to the fundus of the tumour, the depth of the incision increasing from above downwards. The cord is soon exposed and dug out by the fingers along with the testicle, which is finally freed by dividing the resisting gubernaculum testis. The cord and testis lie in a blubbery mass and are easily shelled out. If a hydrocele is present, which is very frequently the case, it is opened after being freed from the tumour and the tunica snipped off with scissors close up to the mesorchium, taking care not to injure the vas deferens, and blood vessels, which are often spread out like a fan at the upper and posterior part, close to the epididymis. It is well to clamp the edge of the divided tunica at this stage with curved or angular pressure forceps, as troublesome oozing is apt to take place from it when the elastic tourniquet is removed. If a hæmatocele is present, I believe it is best to castrate without opening the tunica, merely giving a puncture to confirm diagnosis and then closing it at once with pressure forceps, as the testis is usually atrophied or disorganised, and the contents of the sac, if let out in the wound, might jeopardise the success of the operation. Having dealt with the opposite testicle in a similar manner, I then proceed to sever the tumour by a lateral incision first, on the left side and then on the right, commencing from a point on a level with the upper end of the previous incisions, and curving round the margin of the tumour to terminate at the raphe, about 1½" in front of the anus. While making these incisions all large vessels are clamped as soon as they are exposed and, if possible, before division. I next divide the healthy skin between the penis and spermatic cord by two transverse incisions, separate the fascia between, and pull down the mass which falls and separates readily by its own weight, and finally remove the tumour by a few rapid strokes of the knife. Care is required at this stage not to injure the urethra which lies more superficially than one would imagine being drawn down out of its normal position by the weight of the tumour. It is now that I consider the supine position of the patient to be an advantage over the lithotomy position, as

ELEPHANTIASIS OF THE SCROTUM AND PENIS

By R. D. MURRAY, M.D.



BACK VIEW



ELEPHANTIASIS OF THE SCROTUM AND PENIS



Fig 2
- Elephantiasis of the scrotum and penis, with associated elephantiasis of the leg.



Fig 1

ELEPHANTIASIS OF THE SCROTUM AND PENIS
By R. D. MURRAY, M.B.

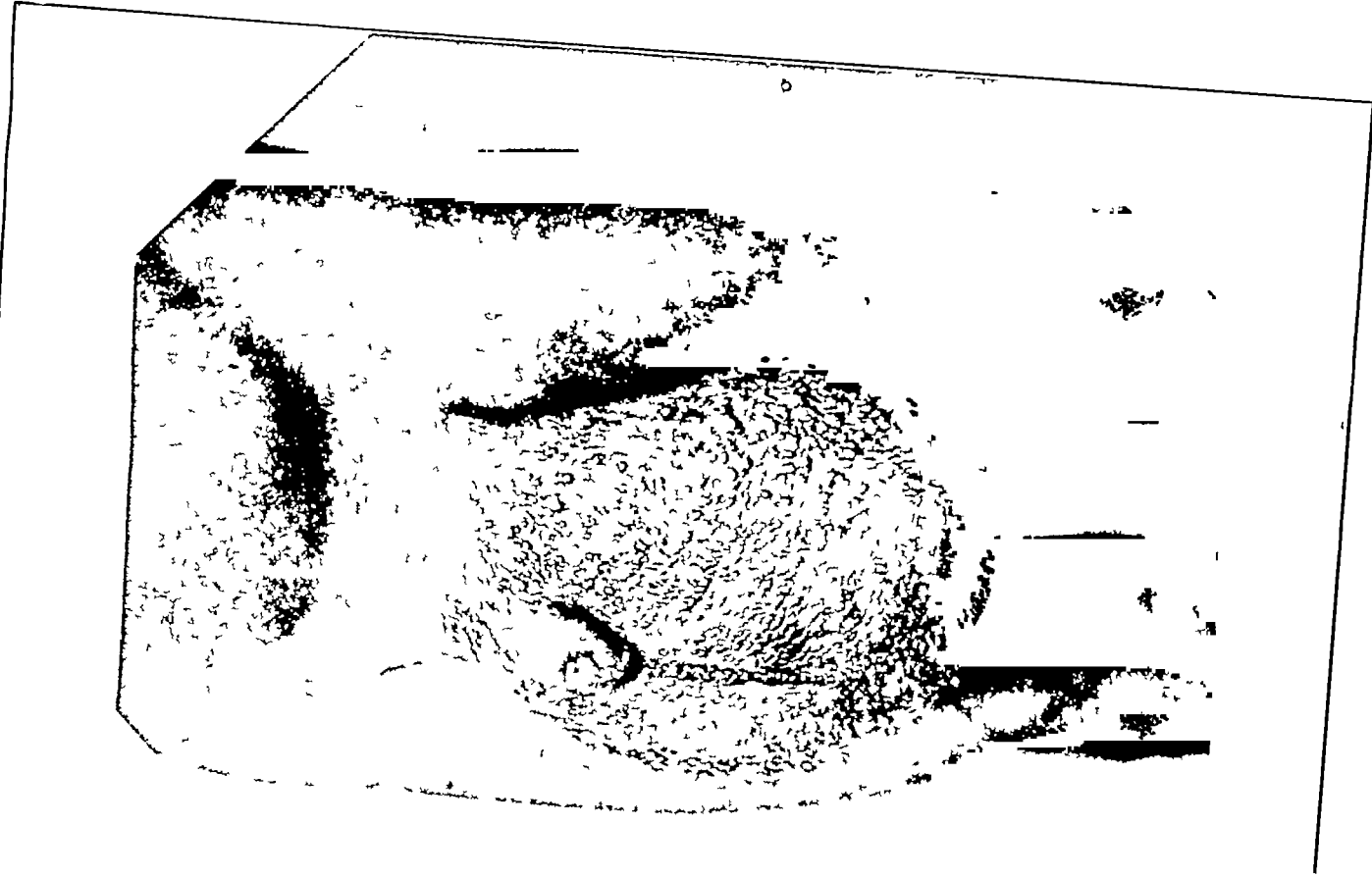
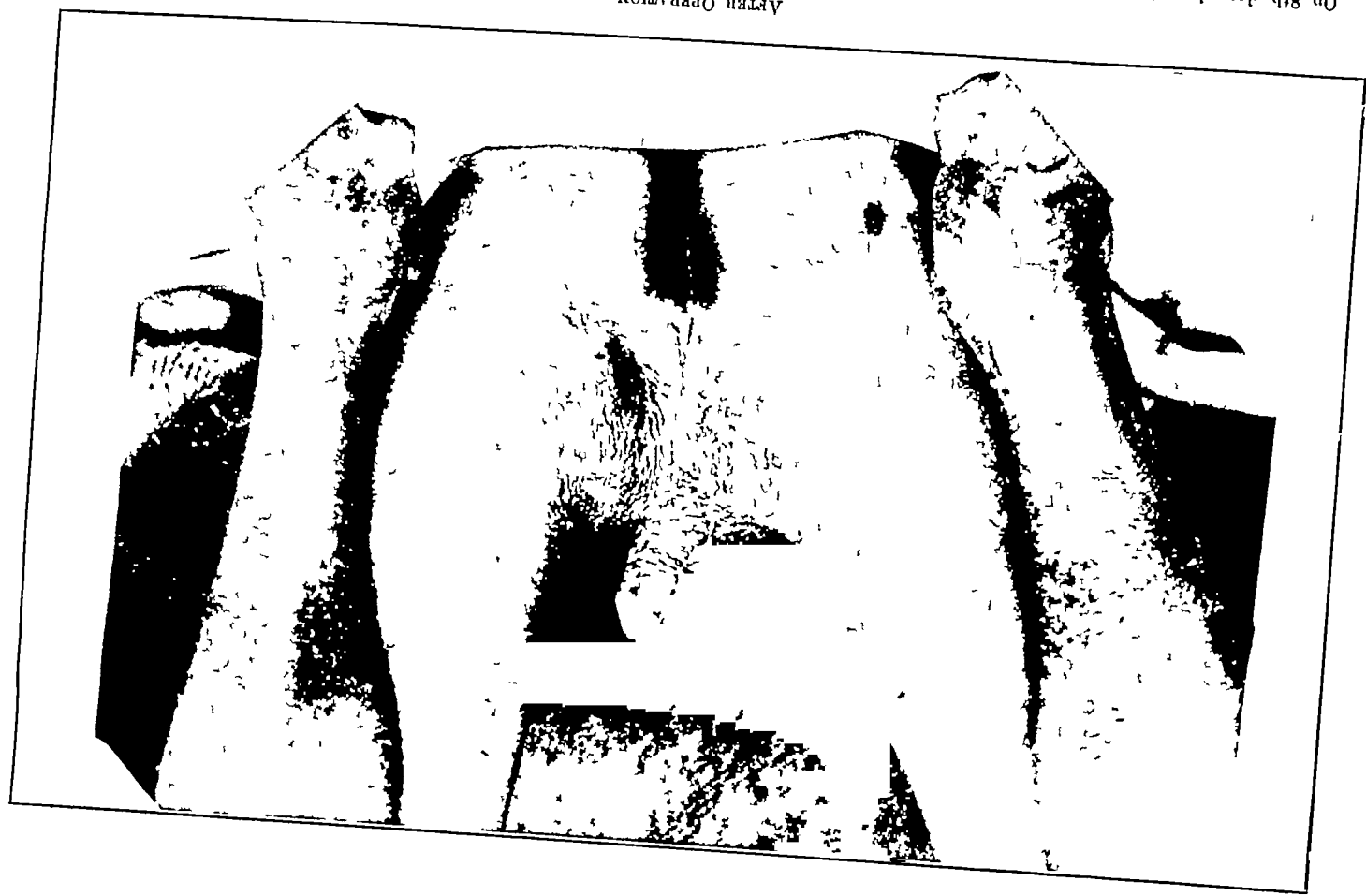


Fig 3
LAMPH SCROTUM
Operation performed on 10th April 1902, and patient discharged well on 25th of



After Operation

On 8th day when stitches were removed the wound is quite healed. The testes can only be faintly made out in the illustration owing to the stretched condition of parts in this position. The wrinkled appearance of the penis is due to desquamation of the cornuous layer of the grafts.

the tumour is supported on the clean aseptic glass table, and does not require to be held by assistants. At the same time it does not unduly drag upon the root of the penis. Having picked up with forceps all important vessels not already clamped and tied them with catgut, the next step is to remove the elastic tourniquet, secure any remaining arteries and make lateral pockets for the reception of the testicles. This is done by snipping across Colles' fascia on a level with the scoto-penile junction for about an inch, introducing two fingers into the opening thus made and freely separating this fascia from the fascia lata of the thigh underneath as far back as the triangular ligament. In this way a fairly capacious pouch is formed, a button hole for drainage is made at its bottom, and a small tube or horse-hair drain pulled through. The testis is then inserted into its new home, and the same performance repeated on the opposite side. Unless drained, the pockets are apt to become tense from serum and bloody oozing, and inflammation may supervene. It will now be found that the edges of the wound on either side can be readily approximated, and stitches can be introduced without any tension. I generally use silkworm gut and stitch up from the lower extremity of the wound to the flexure of the penis. The wound above the penis, which generally gapes widely, can also be readily closed by deep stitches, and now the whole of the formidable looking wound is firmly and securely closed in the middle line. The upper ends of the drainage tubes emerge at the pubis. To prevent undue retraction of the penis, it is well at this stage to pull it well forwards and secure the tunica albuginea on either side by catgut stitches to the edge of the skin. This finishes the operation proper, but I have recently taken to grafting the penis before putting on the dressings, by Thiersch's method, with skin from the inside of the thigh. As a rule, the result is quite successful, and not only is a second operation avoided, but the graft takes better, and the patient's stay in hospital is materially curtailed. Several of my patients have been discharged after this procedure in perfect condition on the 15th day.

MALARIA AND KALA AZAR

By CHAS. A. BENTLEY, M.B., EDIN.,
Berjulia, Tezpur, Assam

"But those clinical types of sub-continued or remittent fever, as we may say, which deviate so far from the common forms of malarial fever, in their course, and in their behaviour when treated with the salts of quinine, these clinical forms no longer appear in the recent descriptions of those who have taken the examination of the blood as their sure guide. Hence the progress now made lies essentially in the elimination of all those forms which the insuffi-

ciency of means of diagnosis, has led many authors and leads even recent writers, to attribute to the (malarial) infection" (*Marchiasava and Bignami*, p. 37).

The primary object of this paper is to show that upon clinical and other grounds it is no longer possible to regard *kala azar*, the epidemic fever, which has existed for so many years in parts of Assam, as a disease of malarial origin.

It is easy to understand how it was that so many of the earlier observers of *kala azar* classed the disease among the malarial fever, for the official nomenclature of disease practically left them no option but to write down the disease as a "remittent fever", this being but a sub-class of the officially recognized "malarial fevers".

Many of the medical men who were brought into contact with disease, recognised however, that it possessed peculiarities which served to mark it off as something essentially different from ordinary malarial disease.

In the Assam Sanitary Report for 1894, a number of opinions are quoted, showing that at that time there was a strong element of doubt regarding the pathology and etiology of *kala-azar*.

It was in fact owing to the generally accepted idea that the disease possessed special characteristics of its own, that led to the sending of the various commissions, which have, from time to time, been deputed by the Indian Government, to enquire into the nature of this disease.

The chief peculiarities exhibited by *kala azar*, as recorded by the earlier observers, were —

(1) The resistance of the disease to treatment by quinine and its steady course down hill, unaffected by treatment.

(2) The communicability of the disease from the sick to the healthy, the infection of sites, and the steady advance of the disease along lines of communication without any accompanying sanitary or climatic change to account for the movements of the epidemic.

These characteristics are as marked to day, in epidemics of *kala azar* as they appeared to be twenty years ago, and I maintain that they have not yet received any adequate or satisfactory explanation.

Besides the points referred to above, we may nowadays recognize that *kala azar* differs also in many other ways from malarial fever, as it exists in other parts of India, and other malarious countries in different parts of the world.

These are —

(4) The absence of malarial blood parasite and malaria from all but a small proportion of cases of *kala azar*.

(B) The striking fact that the indigenous and acclimatized population is the first and most severely affected.

(C) Careful clinical observation, shows that the types of fever found to be usually present in cases of *kala-azar*, are in no way comparable to those generally found to occur in any known malarial fever.

The mistakes which observers of the disease, have frequently made, in attributing *kala azar* to malarial infection, have usually been due, not so much to want of careful clinical observation, as to the confusion which has existed until very recent years, regarding the various manifestations of paludal disease.

This confusion has always been most marked in the case of the so called remittent and continued fevers.

But had practitioners in India been content to follow the indications so clearly given by Crombie at the 1st Indian Medical Congress, there would have been fewer errors of diagnosis to correct in this country during the past seven years.

Crombie in his address refers to the fact that —

"The fevers of India divide themselves into two great classes or groups. In the first of these, are those fevers whose course is interrupted by more or less perfect period of apyrexia, and are, roughly speaking, amen-

able to treatment by quinine. These are the malarial fevers, and in the second group are the continued fevers in which quinine is of no avail."

Also he continues —

"It is in the second group that are found the fevers, the fatal character of which goes so far to swell the death rate of India to its huge proportions."

The confusion which has existed, and which unfortunately still exists, in the minds of many medical men regarding the true significance of the term 'malarial disease,' is often painful to witness.

According to Thayer (p. 3) "The term malaria is used very commonly to describe any continued or irregular fever, the nature of which is not wholly clear."

Nowhere is this better exemplified than in the history of *kala azar*. Reference to both the Reports of Rogers and Ross upon *kala-azar* clearly shows that many of the medical men, brought into contact with the disease, had no definite idea of what is nowadays understood by the terms "malarial fever" or "ordinary malaria."

It was the too ready acceptance, by both Rogers and Ross, of the evidence of these men, which has no doubt led them into the errors, of which their reports bear witness.

A perusal of Rogers' report will show at frequently repeated intervals the statement, that "it is quite impossible to tell early cases of *kala azar* from ordinary malarial fever."

In the detailed statements appended to Ross's report, the various medical officers quoted, all refer to the difficulty, or even the impossibility, of diagnosing an early attack of *kala azar* from malarial fever.

Thus Drs Lavertine and Price, of Nowgong, are quoted as agreeing that the initial fever in *kala azar* might last from three weeks to three months, and resist treatment by quinine, even in doses up to grs 30 thrice daily.

Yet the one (Dr Lavertine) states, immediately below, that "it is impossible to diagnose between malaria and *kala azar*, in its first stage," and the other (Dr Dodda Price) distinctly states "that he has satisfied himself that the disease is malarial fever of a very fatal type."

Evidently these gentlemen were unaware of Laveran's pronouncement, "that these fevers of long continuance, which resist quinine, &c which other authors tell us of, are no longer classed among the malarial fevers."

In spite of Crombie's statement, in 1894, that "we all recognize two kinds of remittent fever—a malarial and a non malarial"—Rogers (in 1896 and 1897) allowed himself to be misled by the opinions of men who evidently held the vaguest ideas regarding the pathology of remittent and continuous fevers.

The fact, which he mentions in his report, regarding the type of initial fever present in the disease, "that about one half of the cases of *kala azar* begin as an irregularly remittent fever," ought to have put him on his guard, for an irregular remittent fever is not one of the common characteristics of "ordinary malarial infection."

Besides this, on his own showing (pp 126-7), this type of fever was entirely different to that usually met with in Assam. For, to quote his words—"It is a remarkable fact that this type of relapsing malarial fever, running into cachexia, is very rare in the Assam Valley (except certain places). This point will be further illustrated in sec VII, when it will be shown that the villagers of Assam readily recognise the fever of *kala azar*, immediately it occurs among them, as something quite different from anything they have previously suffered from."

I hardly imagine that Captain Rogers will be able to prove that these villagers never suffered from "ordinary malarial fever" before the advent of *kala azar*, yet though he and other medical practitioners state their inability to differentiate between the two diseases, and is an acknowledged fact, that for years, the uneducated villager has been able to do so.

Truly this appears to be an instance, where (to quote another paragraph of Captain Rogers' report) "non-medical men, untrammelled by the early teachings of science, see more clearly than the doctors." Before presenting certain clinical evidence to show the non-malarial nature of *kala azar*, I will now discuss in detail the various differences which may be remarked between the latter disease and paludism.

The charts and note of cases, which I hope to append will afford ample illustration of the various points raised in the discussion.

The chief points which, in my opinion, serve to separate *kala azar* from malarial diseases are, briefly—

(a) The extraordinary character of the temperature curve in cases of this fever (*kala azar*).

(b) The remarkable resistance exhibited by this fever to treatment by quinine.

(c) The fact that the indigenous population and long acclimatized immigrants are always the first to suffer from the disease, and that they always suffer the most severely.

(d) The malarial parasites are rarely found in cases of the disease, and melanin is also frequently absent, also that all the varieties of parasite, which may be found in cases of *kala azar*, are found more frequently in other localities where no disease, such as *kala azar*, has been reported to exist.

(e) The communicability and epidemicity of *kala-azar* differs essentially from that usually seen in malarial disease.

The character of the fever

I will now discuss these points more in detail. Reference to the accompanying charts will show that in primary attacks of the disease, the fever frequently takes in the character of an irregular continued fever—not a true remittent, while in the later stage of the disease a peculiarly irregularly marked quotidian fever may exist for short periods, broken up by occasional bursts of a remittent type.

Neither of these temperature curves show anything in common with the charts exhibited by malarial fevers.

They are distinctly atypical, their one fixed characteristic being their irregularity. This is well exemplified by the fact that frequently a low quotidian fever, which has been showing evening rises, say to 101°F or so, may suddenly change and exhibit morning rises, and evening intermissions.

The behaviour of the fever to treatment by quinine is clearly closely associated with the type of the fever.

As was shown by Kelsch and Kiener many years ago, aestival autumnal fevers of so-called remittent type, if left to themselves, might cease spontaneously after 10 or 12 days.

Laveran, referring to fevers of the same class, says—"Left to themselves, the fevers may cause death, or the fever may subside, and this usually from the eighth to the tenth day."

"If treated with quinine (gr 24 to 32) they seldom last longer than four or five days."

Marchesava and Bignami (p. 194), in discussing similar types of malarial fevers, say "Sub continued fevers, as we have already mentioned, present the same variations in the resistance to quinine, this is probably most marked in this so called sub continued 'd'emblee'."

In one case of this type, notwithstanding the administration of the quinine at the very outset, and its being continued regularly, the fever kept its course, uninfluenced by the remedy, for about five days. We do not know of any case in which the resistance to quinine was greater. Yet in the face of evidence like this, which we can most of us readily confirm from our own experience, it frequently happens that fevers which resist quinine for weeks together, are still labelled "Malarial Remittent Fever."

If further evidence were required, one could give a host of quotations to show that the diagnosis of malaria,

in the case of a fever which lasts for over a week, and resists quinine properly administered, is an error of the gravest kind

Mannaberg referring to the diagnosis of atypical cases of fever, says (p 385) "If indeed quinine does its duty, then indeed the correctness of the diagnosis cannot be doubted for a second." Thayer (p 280) states "No malarial fever, which we now know, resists large doses of quinine for more than three or four days. It is quite safe to say that if the process be malarial, the temperature will be quite normal, or at the least will have shown a marked break by the fourth day, usually earlier. If quinine fail to influence the fever, we may rest assured that the process is either non-malarial or else that a complication exists."

Still more recently, Craig (of the American Army,) in writing of the *æstivo autumnal* fever, says (p 188) —

"The mistake of considering an infection, as one of malaria after quinine has been administered over eight days without result, seems to me inexcusable, for all experience has shown that there is no malarial fever that will resist the action of quinine, even after six days of its use, and yet hundreds of cases of fever are drenched with quinine, in supposedly malarial regions, under the mistaken notion that the *æstivo autumnal* fevers are so resistant to the drug, that weeks of treatment are necessary. I have never seen a case of *æstivo autumnal* malaria which resisted the action of quinine for over six days, and doubt if any such exist, provided quinine be properly administered." Compare these statements with those made by Rogers in his report, and the answers given by the various medical men interviewed by Ross upon the subject of *kala azar*.

From my own experience I can affirm that the fever of *kala azar* is absolutely resistant to quinine, in so far that that drug fails to cut short an attack or to prevent a recurrence of pyrexia. When given in large doses of grains 20 to 60, it exerts a certain antipyretic action, reducing the temperature perhaps two degrees. The action is only temporary and is similar to that observed in cases of typhoid fever, treated by quinine, in which the drug, while not in any way aborting the attack, appears to regulate the temperature. I think it is mainly this action which Dr. Dodd Price has observed, for he has shown me charts of cases in which he thought quinine had controlled, without checking the daily rise of temperature.

This action, it must be understood, is entirely different to the specific action exerted by quinine in cases of malarial infection. Here, destroying as it does the active cause of the fever, it acts at once as a parasiticide and an indirect antipyretic.

It has frequently struck me that, had both Rogers and Ross confined their enquiries to tea gardens affected by the *kala azar*, their conclusions might have been different.

It is evident from what they write that they both imagined that the cases of *kala azar*, which they saw at the Government Dispensaries, many of which, as they knew, only came for treatment at irregular intervals, and when the disease was in an advanced condition, were cases of untreated chronic malaria.

On a tea garden, on the other hand, severe cases of fever are followed up and not lost sight of, while probably many of them receive treatment from a very much earlier period in the disease than the average dispensary patient.

It is my experience of tea garden cases, which I have watched from the very first, which has caused me to challenge the malarial theory of the origin of *kala azar*.

In the treatment of cases as they occurred, I took up the only logical position, which a perusal and acceptance of the respective reports of Rogers and Ross, appeared to indicate.

Both the experts declared the disease to be malarial, but while Rogers suggested a pronounced malarial cachexia, to be the condition into which insufficiently

treated patients developed, Ross stated that the symptoms to be found in advanced cases of the disease appeared to be post-malarial in nature.

He argued that untreated or badly treated malarial fever first produced a cachexia, which subsequently developed into a non-malarial disease. In both cases, the indication remained the same, viz, to treat thoroughly all early cases of the disease from the very commencement, so as to prevent the occurrence of malarial cachexia and its secondary effects.

What has been the result of treatment along these lines? Nothing but failure.

Quinine administered in doses of all sizes, from gr 5 to gr 60, have been administered during early attacks of the disease at intervals varying from hourly periods to twenty four hourly periods in the case of big doses.

A maximum of grains 120 has been administered in one day, and doses of grains 30 of the bihydrate of quinine has been administered by intra muscular injection for many days together.

In almost every case the result has been most disappointing. Sometimes it is true that under frequent and prolonged treatment by quinine a patient has appeared to improve in condition without losing his fever, or, in other cases, the type of fever has altered, while the temperature has still remained high. All these cases, however, proved to have intercurrent infections of malaria, which, when eliminated by quinine treatment, still left the original disease unaffected. Sometimes it is true, that I have seen the temperature of a case drop to normal, after heroic doses of quinine by the mouth or by intra muscular injection, but I observed similar effects to occasionally follow large doses of tannic acid, or methylene blue.

Within a day or two also almost every case, which has appeared to give promise of yielding to quinine, has been followed by a relapse of the fever in spite of the treatment being continued.

In cases left to themselves with little or no treatment, but with careful attention to food, the results have been better than in cases dosed continually with drugs.

It is this experience chiefly, which has led to my renunciation of malarial theory of the origin the *kala azar*.

It appears strange that neither Rogers nor Ross appeared to have been struck by the fact that it was the indigenous population, rather than new comers, who suffered first and most severely from *kala azar*.

From its earliest history, *kala azar* appears to have attacked Garos, Kacharis and Assamese, firstly the Garos, and then the Kacharis and Assamese, with special virulence.

Next in order of frequency and severity of attack, were the long acclimatized time expired coolies who had settled down away from the tea gardens. From these again, it spread to the oldest resident coolies upon the gardens, sparing the new coolies, 'unless they happened to be brought into frequent contact with cases of disease.' A few Europeans have been attacked, but usually, although frequently subject to attacks of "ordinary malaria," the white man escapes the dreaded "black fever."

Practically ever since malarial fevers have been differentiated, it has been remarked that the inhabitants of malarious countries did not suffer from the disease like new comers.

Marchiafava and Bignami quote several older authors to show that "the continued fevers hardly ever attack the natives, and the old feverpatients, but usually the people who have lately come to a swampy place (Annesley, Griesinger and Collin) (p 28). Again, further on (p 106) they again state—

"Thus, for instance, it is well known that the severe continued and malignant fevers seize those who are not acclimatized more frequently than the natives of malarial districts, and seldom attack chronic sufferers from malaria, or cachectic persons, &c."

Thayer also points out, that "in regions severely malarious, new comers, inhabitants of temperate climates and non affected regions, are particularly susceptible to the disease," while still more recently Crang states, that "all new comers to a malarious district are much more liable to infection than old residents."

How then can we reconcile these opinions which we know to hold good in our own experience, with the facts which are most strikingly illustrated in the history of *kala azar*?

As I have pointed out in a previous paper, "it is impossible to imagine that this experience can be reversed in one small part of India."

There is, however, even stronger evidence, which can be brought to show the divergence which the phenomena of *kala azar* exhibit from those associated with malarial disease.

Thus although Rogers states (reply to criticisms) that "the plasmodium malaria is constantly present in all stages of the disease," Ross only found parasites present in three out of twenty six cases, and in one of these he expressly states that the infection was most probably recent. It also appears probable that of the fourteen cases of *kala azar* examined by Ross in Naxalbari, none showed the presence of malarial organisms. Ross also remarks that in cases of so called "spleen fever" met with in other parts of India, he was unable to find malarial parasites.

Roughly speaking, then, well accredited case of *kala azar* or a disease resembling it, when examined by Ross, only showed the parasites of malarial fevers to be present in about 5 to 7 per cent of the cases. If we include figures for six uncertain cases of *kala azar*, we only arrive at the proportion of about 10 to 12 per cent.

Yet recently Dr Christophers and Captain James, I.M.S. have found malarial parasites present to the extent of 25 per cent in the case of men of the Royal Artillery at Menn Mir.

There is no suggestion, however, that these men were suffering from *kala azar*. Again, if we examine Ross report, we shall note that he found malignant tertian parasites present in three cases of *kala azar* and quartan parasite present in three suspected cases of the disease. If the disease had anything to do with malaria, we should be justified in coming to the conclusion from this fact that more than one form of malarial parasite, could produce the disease. Ross also mentions that Benign Tertian parasite were found to be present in certain cases of malarial fever examined. Now a reference to the transactions of the Nagpur Malarial Conference, held in January last shows that, on the authority of Drs Stephens and Christophers, quartan and malarial parasites are most common in the Duars, and according to the evidence of Dr Powell malignant tertian parasites are the commonest form in Cachar.

Major Andrew Buchanan, I.M.S. also pointed out, both at the Conference and in his recent book upon the malarial parasite, that four varieties of parasites are present in Nagpur. At the same time, in his book, he emphasizes the use of quinine in the treatment of malarial fevers.

Now here we have a case of the supposed causes of *kala azar* being found in all parts of the country, quite unassociated with cases of the disease they are supposed to produce.

There are no records of *kala-azar* occurring in the Duars or Chota Nagpur and though I believe cases have been reported from Cachar my own experience of that district leads me to make the statement that they are exceedingly rare there.

Evidently then, we are not justified in assuming that the different kinds of malarial parasites have anything to do with the causation of *kala azar*, otherwise we should expect to hear of very many cases of disease from other parts of India and the world.

My own experience confirms the results arrived at by Ross, concerning the frequency of parasites of malaria in the blood. In this district I have found both Quartan and malignant Tertian parasites in the blood of cases of *kala azar*.

The latter parasite is the most common in this district, and is the one that is usually to be found in the blood of Europeans when suffering from fever.

Towards the beginning of the year, I met with a succession of cases of Quartan fever, in a coolie line, which I knew to be in affected with *kala azar*. More than one case which had shown symptoms of *kala azar*, developed attacks of Quartan fever. At first I thought there might be some connection between this fever and *kala azar*, but subsequent experience showed me my mistake.

At the present moment, however, I have under treatment, a recovered case of *kala azar*, which a fortnight ago developed a typical attack of quartan fever, with many parasites in the blood. After allowing the case to go on for some few days, when it exhibited a beautiful Quartan chart, I stopped the attack by two doses of quinine.

The marked effect of the drug in this case, is in great contrast to the resistance exhibited by cases of *kala azar*.

After reviewing these facts how can we attempt to reconcile them with the malarial theory of the origin of *kala azar*?

If the various malarial parasites can produce certain effects in isolated portions of Assam, why do they not do the same in other parts of India?

But there are still other points, in which *kala azar* differs essentially from all known forms of malarial fever, I allude to its marked communicability and epidemicity.

These two characteristics, it must be remembered, have been noted from the very first outbreak of the disease, in the Garo Hills and almost every medical man, who has met with the disease, has referred to them as indicating that "something more than the malarial poison was required to explain them. No one who has had anything to do with cases of *kala azar*, will doubt its communicability for an instant.

I have seen the following series of cases occur in one house and this illustration is fairly typical of the way in which the disease appears to spread from the sick to the healthy.

Some time ago, the wife of a garden sirdar contracted the disease and shortly became so ill as to be unable to leave her house. Her husband obtained leave to remain away from work in order to nurse her. After the woman had been bedridden for a short time, chronic diarrhoea set in, and in her weak state, the woman passed all her evacuations under her. Shortly afterwards she died, but almost immediately the husband who had been carefully nursing her, and sleeping on the floor, which must have been more or less contaminated developed symptoms of the disease.

He was a strong man, but so quickly did he succumb to the influence of the poison, that within a month, he was lying bedridden, in the house in which his wife died.

A man of the same caste, was set to attend him, but hardly had he worked two months, when he contracted the disease and another sick nurse was appointed, again after an interval of two to three months, the second attendant sickened with *kala azar*.

A third man, a strong old coolie was then appointed to act as nurse, and continued his services until the death of the Sirdar relieved him. Meanwhile, the two other attendants had both died from the disease, and within a week of the death of the patient the third and last man was prostrated by an attack of the malady. In his case, the course was so rapid, that within two or three months, he had joined the others. This series of cases, as far as I can remember, without referring to my

books occupied a period of just over twelve months. From first to last, they were treated with quinine, all the attendants receiving prophylactic doses of the drug daily.

Any one who cares to refer to Rogers' Report will find numerous instances given illustrating the communicability of the disease, and they will notice that he (Rogers) was so impressed at the time with this fact—recognizing at once that it did not coincide with the ordinary history of malaria, as met with in other parts of India—that to explain it, he had to invent a theory "of increased virulence."

It will be noticed that Ross practically ignores the question of the marked communicability. He discusses it, it is true, but comes to the conclusion that it does not differ from the communicability to be recognized in the malarial disease of other localities and countries. For the same conditions, which he imagines, may increase the liability to infection, on the part of natives in the *kala azar* districts of Assam, exist alike in other non infected parts of that province.

He apparently forgets also, that until the formulation of the mosquito theory of the transmission of malaria, that disease was not looked upon as one communicable from patient to patient, in spite of the work of thousands of medical men, daily meeting with and studying cases of the disease. On the other hand, *kala-azar*, ever since it has been known, has always attracted the attention, even of non medical men, by its marked quality of communicability.

Reference to both the reports of Rogers upon *kala azar*, and that of Major Harold Brown, 1882, upon *kala dukh*, which occurs in Purnea, show that both these authors appear to regard those respective diseases as soil infections. These theories are borne out by many known facts, and it is curious that they are most strongly believed in by the natives of the affected districts.

The Kacharis and Assamese say that when *kala azar* has broken out in a village, it is necessary to leave the spot for a time, but that if sufficient time has elapsed the place will become clean again, and the site can be re occupied without danger. There appears to me little doubt that contamination of the houses and their vicinity by the faecal and other evacuations of the patients, have a marked influence in causing the spread of the disease.

The fact also, that a fair proportion of cases begin in the dry weather as a sort of pneumonia of a low type, may lend some support to the idea that the germs of the disease can enter the body by the lungs. Dust may yet be found to be a probable source of infection in this disease as in cerebro spinal fever. A careful study of the record will show that the epidemiology of *kala azar* differs essentially from what we know of malarial disease.

Almost all other diseases, which appear as epidemics, pass quickly through a district or country in one season, perhaps recurring again and again in the same place.

Kala azar, on the other hand, has taken thirty years to travel half way up the Assam Valley, and where it has died out, we do not hear of its recurrence, although I think it extremely probable that it has left behind it a mild form of the disease.

If we refer to reported instances of epidemics of malaria, we shall find that at the worst, they only lasted one or two years. On the other hand, I do not for a moment believe that the epidemics that were frequently reported to be of a malarial nature, were also of this character.

It is a very significant fact that since the discovery of the malarial parasite by Laveran, there have been very few well authenticated epidemics of malaria.

Two of the latest to be reported appear to be probably entirely non malarial in character.

I refer to the epidemic of so called malarial fever, which was reported to have occurred among the United

States troops, at Chickamouga Park, during the Spanish-American war.

This outbreak, turned out on investigation to be one of typhoid fever. Again, the reported epidemic of malaria, which occurred recently in the Punjab, would appear to be due to some other influences, if we take note of the significant remark made by Captain Lamb, 1 M S, at the Nagpur Malaria Conference.

This officer pointed out that he failed to find malarial parasite in the blood of 200 cases of an anomalous form of fever, which he met with at Guzrat. Facts like these are most interesting and instructive.

In view of this question, it is worth noting that in almost all reported epidemics of malaria, the type of fever, described as being present, is almost always either a remittent or a continued one, and as we know, it is precisely these forms of fever, which have always caused extreme difficulty in the matter of diagnosis.

In spite of Ross' statement, that "even before the differentiation of typhoid and ever since the days of Fort, the profession was quite able to distinguish between the malarial and continued fevers," many mistakes occur even at the present day, and it is probably only the most self-confident of medical men who will refuse to plead "guilty" to the suggestions of a more than occasional mistaken diagnosis when dealing with the numerous cases of fevers of all kinds met with in daily practice in this country.

And now in further illustration of many of these points, I will give short notes of several fairly typical cases of *kala azar* that I have met with comparatively recently.

Case I—A woman, single, aged about 30 years, had lived in the garden some fourteen or fifteen years. Previously never suffered much from fever. The coolie lines in which she lived had always been considered healthy until the advent of *kala azar*.

Her illness began with a sudden attack of fever of a remittent or continued character. The type of this primary burst is shown in the accompanying chart. Notwithstanding treatment with large doses of quinine, which was commenced from the very beginning of the attack, the fever failed to yield until the fourteenth day, only to rise again to above normal immediately. After remaining intermittently at 99°F for about a week it gradually rose again in spite of the fact that the dosage of quinine had been increased to grains 60 per diem. Finding that quinine given by the mouth had no effect, doses of gr 15 to 20 of the Bi hydrochloride were given by intramuscular injection. These likewise failed to reduce the temperature which remained persistently high with the exception of one or two drops below normal of a few hours' duration. At the end of some six or seven weeks of almost continuous fever, during which time the patient's spleen and liver had become greatly enlarged, she was taken with a rapid rise of temperature, during which her breathing became obstructed, and death resulted suddenly, apparently from heart failure.

Remarks—This case, but for its rapid ending, is fairly typical of the commencement of many cases of *kala-azar*.

Like all cases of the disease, the fever proved to be absolutely resistant to quinine. The primary burst of fever appeared to last about a fortnight, and this was followed by a few days of relative apyrexia, which in turn was followed by another sharp burst of fever—and so on till the end came.

In this case I am afraid that the quinine given was distinctly harmful—certainly it did no good.

Case II—A sirdar, from the same lines as case No. I, who had been very many years on the garden, and for the nine months in which I was acquainted with him previous to his contracting *kala azar* had always appeared strong and healthy. His illness began with an attack of high fever—without a rigor—which took

on a continuous character, only varying between 101° and 105°F for many days together. The patient suffered from severe headache and occasional delirium. His breath was foul and his tongue furred. Quinine was administered in full doses of gr. xx, from the very first, this dose being repeated several times in the twenty four hours, but the drug appeared to have no effect upon the temperature. Slight remissions of the fever were accompanied with exceeding heavy sweating.

This fever continued, with only two or three slight interruptions, when the temperature fell suddenly below normal for a few hours, for nearly three months the liver and spleen became greatly enlarged. During this time other remedies, such as Methylene Blue, Tannic acid, Warburg's Tincture, and various antipyretics were tried without avail. During the course of the illness, the patient suffered from severe pain and tenderness in his knee, ankle, and hip joints, which appeared to come and go without anything to account for the sudden changes.

At last, after a drop below normal, on the 67th and 68th days of the disease, the patient's temperature again rose and remained persistently high until the 91st day, when death occurred from heart failure.

During the last few weeks of this case quinine which had been continued in small doses during the time when the effect of the other drugs was being tried was again resorted to in large doses, but once more proved absolutely useless to check the course of the fever.

Case III—This case, which has now been continuing for a period of some eight or nine months, is one of a more chronic type.

The patient, a woman, is an old coolie. Her attack dates from the last cold weather when it began with an irregular burst of fever. Unfortunately I have not got the chart for the initial attack, the chart given commencing at the second burst of fever on the twenty-ninth day. Like the other cases this patient was treated from the first unsparingly with quinine but though this treatment was continued for months, the patient cannot be said to have derived much benefit from it. She has recently been treated with small doses of Donovan's solution, and her condition is slightly better although the irregular fever continues. Her appetite is good, and she does not exhibit much anemia, but her liver and spleen are considerably enlarged. I think that unless she contracts an attack of dysentery or diarrhoea, there is every prospect of her eventual recovery.

Case IV—This case is also a female patient, but in another garden. Her attack also commenced in the cold weather, with what appeared to be an atypical pneumonia of a low type.

Instead of recovering after a week or so, however, her fever became chronic. Her lungs became absolutely right again, but her spleen and liver began to enlarge. Her illness has now gone on for some ten months, but she does not show any sign of cachexia, although still suffering from almost continual fever.

She like the previous cases has been treated with large doses of quinine from the earliest days of her illness, but it does not seem to have affected her one way or the other.

In appearance, she is plump and healthy looking, the only signs of the disease being the noticeable fact that almost all her hair has fallen. On examination too, her spleen and liver are found to be enlarged, and a clinical thermometer generally shows her temperature to be 100° to 102°F. The woman shows no signs of anemia to ordinary examination.

I must now briefly conclude this paper which has drawn out to much greater length than I had intended.

I think that all medical men who will carefully consider the few facts that I have endeavored to lay before them, and who will honestly compare them with what they know of malarial disease by personal experience and by the study of recent authors, will acknowledge that it is no longer possible to consider *kala azar* to be a disease of malarial origin.

It is possible that medical men who still retain the theories of a by gone generation, and who are separated from the laboratory and library, may say that they remain unconvinced, but I think that those who have kept, or attempted to keep, themselves abreast of recent work done in the field of malarial disease, will admit that there is a strong case against the malarial theory of the origin of *kala azar*.

Death rates—*Kala azar* and malarial disease differ essentially as regards death rate. The authenticated case mortality upon 200 cases of *kala azar* treated under European medical supervision is given by Rogers at 98%. This, it may be remarked, occurred under anti-malarial treatment. The generally recognized death rate for malarial disease is 2%, a figure mentioned by Crombie in his address at the first Indian Medical Congress. The figures given by Celli in "Malaria according to the new researches" work out about the same.

Now, as I have pointed out above, malarial disease is considered by most authorities to be wonderfully amenable to treatment by quinine, yet we see that *kala-azar* when submitted to treatment by that drug yields a most appalling death rate. Neither Rogers nor Dr Dodds Price give any explanation of this anomaly.

Rogers appears to lay great stress upon the question of death rates as of diagnostic importance. In view of what we know of the appalling mortality from plithiasis, among the North American Indians, and the frightful death rate from measles and small pox among susceptible coloured races, I cannot say that I attach any great importance to the matter of death rates. Conditions of treatment, race, peculiarities and habits, all have to be considered. Still I would emphasize the fact that in *kala azar*, we meet with a case mortality far greater than has ever been reported as occurring in malarial disease. Will Captain Rogers or Dr Dodds Price explain the difference between 2% and 98%?

In connection with this point also, I would refer those interested in the matter, to Ross' Report upon *kala-azar*.

In the October number of the *I M G* for this year, Captain Rogers makes the statement that "the death-rate of *kala azar* in Nowgong has been reduced from 96% to 50% under anti-malarial treatment."

In Ross' Report, Dr Dodds Price is quoted *verbatim* as stating that "I think *kala azar* has become modified during the last year becoming briefer and more severe, but not so common."

This statement was made some two years after Rogers' investigation, and his recommendation of more drastic anti-malarial treatment for the disease. It is self-evident that a disease which already showed a 96% case mortality could not possibly become more severe, except by becoming briefer, and apparently this result followed the adoption of the more drastic quinine treatment recommended by Captain Rogers.

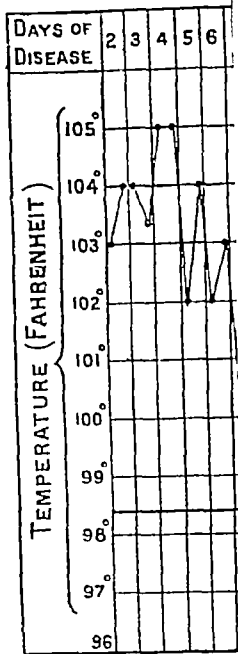
It is unnecessary to point out that, as Captain Rogers' history of *kala azar* shows, the usual course of the disease is a gradual lessening of the epidemic, both as regards virulence and extent, and a final dying out of the disease from a one time infected district.

This I take it, is the true explanation of the lessened death rate reported from Nowgong.

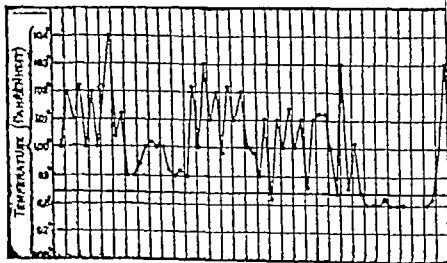
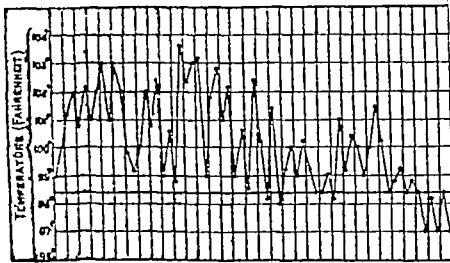
Parasites and Melanin—During the past month I have examined blood films from some hundred cases of fever in this district, including 50 cases of *kala azar*.

The method adopted is as follows. Two dried films are prepared from each case at each sitting in order to provide control material. The films are stained by Grubler's modified Romanoffsky's stain, and are carefully examined with a $\frac{1}{4}$ " oil immersion objective, No. 2 Eyepiece, by means of a mechanical stage.

Films not showing malarial parasites on immediate examination are given a prolonged examination extending to at least half an hour. Besides dried films fresh films, plain or stained by methylene blue, are also taken from most cases.



PRIMA



The hundred cases work out as follows —

48 *Kala azar* cases, adults or children of 12 or over — No malarial parasites and no melanin. In cases showing marked cachexia, great changes in size and shape of red blood cells, also polychromatophilia. In all cases, as marked increase of blood plates.

2 *Kala azar* cases, children under 3 years — Both cases exhibited numbers of æstivo-autumnal rings, and one case showed a few crescents. Pigmented leucocytes were also to be seen.

Note — None of these cases had received quinine. After administration of quinine, the parasite disappeared from the blood of the two children, but their attacks of fever still continued.

2 Cases of fever in children of 1 and 2 years respectively, living in the *kala-azar* camp — One child showed æstivo autumnal rings in large numbers. The other showed benign tertian parasites in various stages of development. Both cases showed pigmented leucocytes. The administration of quinine was followed by a rapid disappearance of the parasites and a cessation of the fever in both cases.

2 Cases of fever in Europeans — Both cases showed benign tertian parasites — both young and adult forms. Both cases yielded at once to quinine treatment, although parasites could be found in one case, two days after the administration of the first dose of quinine. Parasites eventually entirely disappeared.

10 Cases of fever in young children (in arms) — Two cases showed benign tertian and æstivo autumnal infection. One having large numbers of crescents in the blood. Eight cases showed æstivo autumnal infection, one being very marked. I counted as many as eight minute rings, in one R B C in this case. All these cases occurred upon gardens non infected by *kala azar*.

4 Cases of children aged from 3 to 6

32 Cases of fever in adults of various ages — None of these cases showed either parasites or melanin, although most of them had their blood examined on several occasions. Some attacks lasted only a few hours, and some for two or three days, while others showed a more or less continued fever for a week or more. These cases occurred upon gardens non infected by *kala-azar*.

I have also recently examined some smears of spleen juices from six fatal cases of *kala azar*.

None of these showed any trace of melanin, neither were malarial parasites to be discovered.

In this part of Assam, it appears to be the rule for Europeans and Native children to show malarial parasites in the blood during attacks of fever. Adult native coolies, however, although frequent sufferers from febrile attacks, lasting from one to fifteen days or more, apparently appear to be exempt from malarial infection.

I intend collecting films from recent arrivals in Assam in order to see whether this immunity is acquired after or before residence in this province.

Dr Dodds Price is perfectly at liberty to publish statements regarding his own discoveries, but the novel way which he has adopted to try and bolster up his own theory, is one that can hardly commend itself to the average contributor to medical literature.

It is quite incorrect that I discovered malarial parasites in all cases of *kala-azar* examined by us in Nowgong and Tezpur. I refer him to my own published statements in the *I M G* and the *B M J*.

If he would kindly describe and name the variety of parasite discovered, his statement would have been of more interest.

As it is, it is quite as vague as the description given by Captain Rogers of the malarial parasites found by him in the blood of cases of *kala-azar* at all stages of the disease. In my British Medical Association paper, a sufficient description is given of the bodies to which Dr Dodds Price probably refers.

A SERIES OF CASES OF HEART DISEASE.

By B CHATTERTON, M.D., M.CH.,

CAPT., I.M.S.,

Civil Surgeon, Gaya

I HAVE ventured to set down the notes of a series of heart cases, and a case of aortic aneurysm which have come under my notice in the last few months, in the hope that they may prove of interest to the many readers of the *Indian Medical Gazette*. In four of the recorded cases the patients are convicts in the jail. The remaining three, of which the notes are more scanty, occurred in private practice. I have also been able to take pulse tracings of all the cases except the two last, thanks to the thoughtful provision of a sphygmograph by my predecessor Major Sunder, I.M.S.

Case I — S B B, a male convict, aged twenty-five years, was found on admission to the jail on 30th May 1902 to have a pulmonary systolic murmur.

History — Indefinite. He says he has suffered from pre cordial pain for about one year.

Present state — He is markedly gaining weight and is robust and muscular looking with a well developed chest. He looks a typically healthy and well fed Hindu, and all his other organs are quite normal. The remaining remarks on his case will, therefore, be confined to his heart.

PHYSICAL EXAMINATION OF HEART

Inspection shows no impulse.

Palpation gives a thrill over the cartilages and ribs, second, third and fourth immediately to left of sternum, only to be felt over a small area.

Percussion shows deep cardiac dulness as indicated in the accompanying figure (Fig 1), from which it is evident that the right side of the heart is not in any way dilated or hypertrophied.

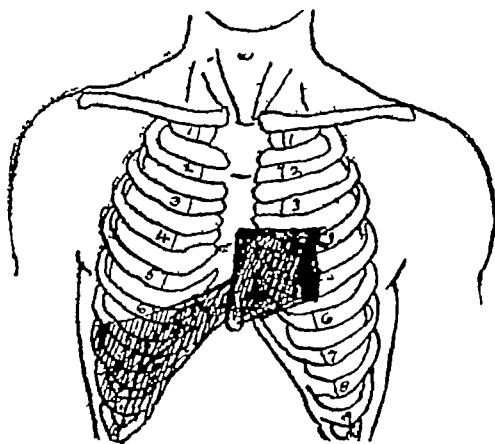


Fig 1

Auscultation — First sound of heart at apex loud and ringing.

Aortic second sound — Clear and distinct.

Pulmonary area — There has been throughout the period of observation a pulmonary systolic murmur, loud, rough and prolonged, and continued right up to the second sound.

The murmur is loudest in the second left interspace and has not got a large area of distribution, being

inaudible one such away from this point in any direction

The heart is regular and the beats forcible. The accompanying tracing (Fig 2) shows the state of the pulse

Auscultation—The point of maximum intensity of the apex beat is about $2\frac{1}{2}$ inches below nipple and slightly external to the mammary line

There is an apical systolic murmur conveyed for a distance of about $1\frac{1}{2}$ inches only towards the axilla

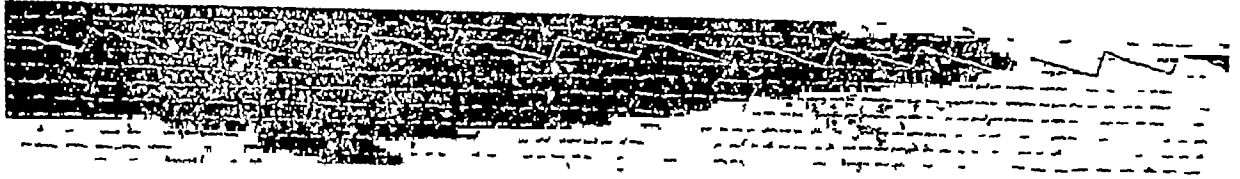


Fig 2

Remarks on Causation, etc—The man was not anæmic on admission, and so anæmia as a cause may be dismissed. He has been steadily gaining weight and taking ordinary tonics with iron, and yet the murmur has continued

There is no history of prolonged exertion, and further he has been completely rested for six weeks and yet the murmur continues precisely as before

There is no evidence whatever of congenital heart malformation and no trace of cyanosis. He complains of feeling breathless when I make him run, but he does not appear at all unduly so. Running swinging a hand fan, and bending up and down increases the loudness of the murmur.

A deep breath held causes the murmur to almost entirely disappear. I am of opinion therefore that this is one of those cases described by Broadbent, in which he considers the normal lung covering of the pulmonary conus asterosus to be deficient, so that under ordinary circumstances the conus flattens itself against the chest wall during the systole of the right ventricle, the pressure causing an eddy of blood and so a murmur. When, on the other hand, a full breath is taken the extra inflation of the lung causes the edge to overlap the conus and so suppresses the murmur. I have consequently returned the man after prolonged observation to medium labour with excellent results

Case II—J B, aged 40 50 years, ploughman and cultivator, was admitted to Gaya jail as an under trial prisoner in May 1902. On admission he was found to be suffering from an aortic systolic murmur, also from an apical systolic murmur, the cause of which latter was not at first decided

Moving inwards towards the sternum, there is an evident reduplication of the first sound, while passing up to the third right interspace there is a systolic murmur replacing the first sound of the heart and conveyed along the aorta, and great vessels of the neck, for a considerable portion of their course

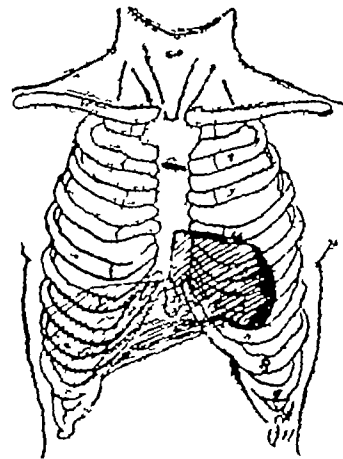


Fig 3

The pulse, as indicated by the accompanying tracing, (Fig 4) shows a short and slightly sloping percussion element and a long wave. The radial artery, when felt remains full between the beats and does not collapse at all

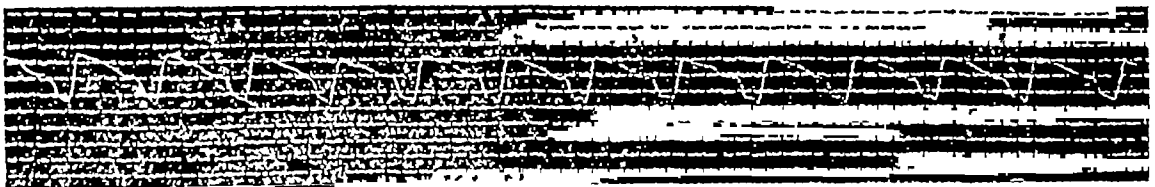


Fig 4

History—Of hard work and syphilis

Present state—Healthy and muscular. Veins all over body appear somewhat varicose, especially in legs. Has no symptoms whatever, and declares that he is not in any way ill. He shows no evidence of organic disease of any kind excepting that his heart is affected and his veins generally varicose

Heart—Inspection shows no sign of any pulsation over the cardiac area. Carotid pulsation is, however, marked on both sides, right up behind the ramus of the jaws

Palpation—Yields an impulse at the apex, but no thrill anywhere

The apex beat is felt best in the sixth intercostal space. Percussion, as per attached figure (Fig 3), shows some enlargement of the left ventricle, the apex being displaced downwards, but not much outwards

The liver and spleen are normal. There is no anemia and no dyspepsia. The urine specific gravity 1018 acid in reaction, and shows no trace of albumen or sugar. The pulse, as can be seen from the tracing, is quite regular

The question of diagnosis has to be settled, and it seems to me to rest between the following conditions—

(1) Pure aortic stenosis with hypertrophy of the left ventricle and a systolic murmur conveyed to the apex by the wall of the ventricle

(2) Aortic stenosis followed by mitral incompetence

(3) Simple roughening of the aortic valves or aortitis giving rise to a systolic aortic murmur, while the main lesion is a mitral incompetence shown only by an apical systolic murmur

My opinion is that the first condition is the one present, and for my opinion I give the following reasons —

- (1) The character of the pulse
- (2) The fact that the apical murmur has not got the distribution towards the axilla, which a proportionately loud mitral murmur would have
- (3) The degree and amount of hypertrophy of the left ventricle
- (4) The fact that, so far the patient has been entirely free from symptoms of any kind, which, in a man of his age and occupation, would not be likely to be so, if he were suffering from mitral incompetence

I should say that the prognosis for this man while in jail is good, as he is put on light labour, but probably, if he had occasion to perform very heavy labour, his compensation would rapidly fail, and mitral incompetence with its attendant train of evils would occur. The syphilis and hard work combined are probably accountable for his cardiac disease

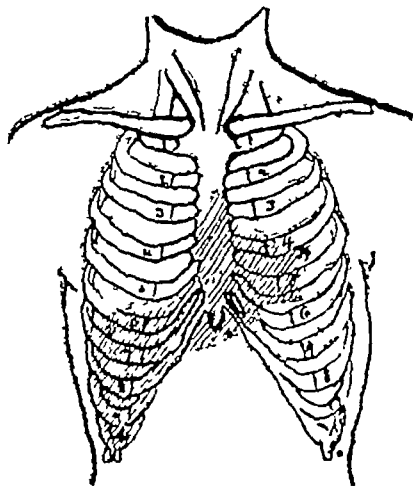


Fig 5

The reduplication of the first sound near the apex would be accounted for in condition (1) by the delay occasioned in the emptying of the blood from the left ventricle into the aorta through the narrowed aortic orifice. The physical signs in the heart are increasing. He is doing light labour and no failure of compensation is so far evident.

Case No III—R P A, aged about forty years, was admitted to jail as a transferred convict in June 1902, looking very pale and ill. He was found to be suffering from a double murmur in the aortic region and was sent straight to hospital.

travelling up to base. Epigastric pulsation marked. Carotid pulsation marked. External jugular vein very prominent also pulsating. Brachial pulsation visible.

Palpation—A diffuse heaving impulse imparted to hand over region of apex, and a distinct thrill over base of heart.

Percussion—Deep dulness as per annexed figure (Fig 5).

Auscultation at apex—Both sounds short and of equal length, the first sound being very faint and indistinct.

At base—A to and fro murmur audible in the aortic region, i.e., just outside the right edge of the sternum over the second interspace and second rib cartilage.

Both these murmurs are rough and short, the diastolic murmur being the longer of the two in duration. Standing up increases the loudness and duration of these two murmurs, especially the diastolic. These murmurs are not transmitted along the vessels for any distance, and a second sound to the heart is audible in the common carotid arteries.

The pulse—As will be seen from the accompanying tracing (Fig 6), the pulse is very collapsing. The ascent is very steep and the descent also very abrupt.

The ordinary rate of the pulse while lying still is 76. The pulse is regular. The pulse is markedly "delayed," i.e., a finger on the carotid or apex beat gets an impulse at an appreciable interval before the finger on the radial pulse receives its impulse.

The lungs—The right base is dull behind and crepitant râles are audible over both bases behind. I should note that the rest and tonics cleared the lungs while at rest, but when discharged into the special gang the lung troubles returned.

Urine—No albumen or sugar.

Diagnosis, &c—On first examination I was inclined to consider the case as one of double aortic disease, i.e., aortic incompetence, coupled with stenosis. Further examination, however, convinces me that the case is one of pure aortic incompetence with roughening of the valves, causing a systolic murmur. The points that lead me to this conclusion were —

- (1) The distinctly "water hammer" character of the pulse
- (2) The marked delay of the pulse
- (3) The small degree of transmission of the murmurs into the great vessels, the murmur only being audible a few inches from the source of its production in the direction of the great vessels.

If there were stenosis co existing with incompetence I do not think the pulse would present the characters displayed by the tracing. The amount of blood passed out of the left ventricle would be smaller, and the

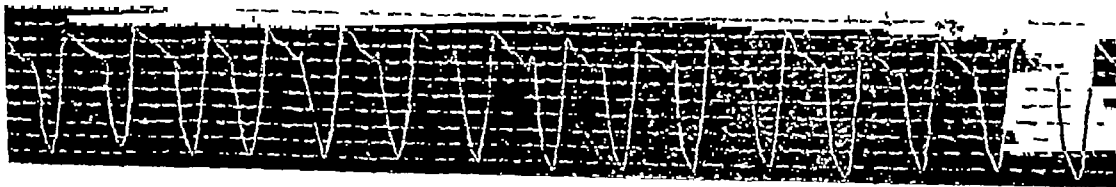


Fig 6

History—Hard work only. No history of syphilis or rheumatism. States that he faints occasionally if he makes a strong effort. Has only noticed his symptoms for four months. Denies that he is really ill, but says he is weak, and feels very giddy when he walks.

Present state—Very pale. Rather thin. Marked carotid pulsation visible. Other superficial arteries visibly pulsating when watched.

Physical examination—Heart

Inspection—General heavy impulse apparent over the chest wall—cardiac region, beginning at apex and

opening being narrowed, the amount of regurgitation would be less. So I think the sudden increase of pressure and its equally sudden collapse would not be shown by the pulse.

The delay in the pulse, which is no doubt caused by the fact that the arteries are fairly empty, and that those nearest the heart are the first to communicate the systolic increase of pressure to the finger is also in my opinion in favour of pure incompetence.

The short length of transmission is merely a question of opinion, but my experience is that marked stenotic

murmurs are conveyed further along the arteries than the one I am trying to describe

Prognosis, &c—I cannot account for this man's disease in any other way than that it arose from overwork and perhaps underfeeding

The prognosis, I believe, to be absolutely bad, as I do not think the left ventricle is able to do anything in the way of hypertrophy to help. The first sound of the heart at the apex is very weak and indistinct

The only treatment of any use I believe to be absolute rest with ordinary bitter tonics to try and increase the general nutrition which is suffering greatly. Opium seems to relieve the symptoms

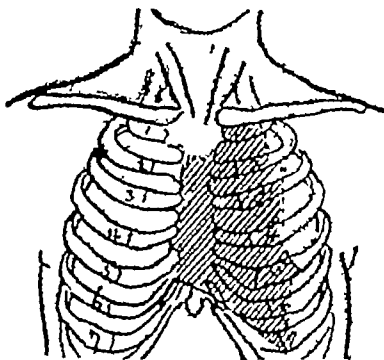


Fig 7

There is one point in the prognosis which Broadbent lays great stress on as a favourable sign, namely, the fact that the second sound of the heart is audible in the great vessels of the neck. Of this sign Broadbent says—

"A second sound therefore heard in the neck indicates that the regurgitation is small in amount, and is consequently a favourable prognostic element." He says that, "it is not their clicking as they meet, or the tension of the valves alone under the column of blood, but the vibration of the entire ascending aorta," which produces the second sound of the heart. In order to produce this sound the valves must offer sufficient check to the back flow of blood into the ventricle to enable the vibration described to take place. Therefore, in the above case, there is one hopeful element.

fourth costal cartilages. Over this area and down as far as the level of the nipple, and between the mammary line and sternal border, an undulating pulsation of the chest wall is visible

The apex beat is much diffused and can be seen lowest in the seventh interspace about the mammary line. Carotid pulsation visible in the neck

Palpation—Shows a slight thrill over apex region. A very marked and forcible thrill over the tumour, so marked as to be noticeable by a casual observer. On pressing deeply into the intercostal spaces over the tumour a marked expansile pulsation is distinctly felt

Percussion—Shows dulness over the cardiac and left sub clavicular regions as per diagram (Fig 7)

Auscultation—Apex—A prolonged systolic murmur which can be heard across the axilla and round to the angle of the scapula (left)

Base—A systolic murmur, long and cooing. The aortic valves can be heard to close with a dull rather booming sound at the end of this murmur

Over the Pulmonary area and Tumour—A roaring, rasping murmur, which can be followed to both carotids, and sub clavians, but loudest on the left, also it can be distinctly heard in the left brachial artery, also clearly and loudly audible along the left of the vertebral column down about to the tenth dorsal vertebra. It is so loud behind between the shoulder blades as to mask the lung sounds entirely

Diastolic shock is well marked over the pulmonary and tumour region, and the second sound is strongly reinforced over the tumour and out to the left

There is no tracheal tugging

No alteration in the voice

No dysphagia, and no dyspnoea so long as the patient remains quiet

Other organs all normal. Urine normal

Diagnosis, &c—The only point which I think needs clearing up in this case is—which portion of the aorta is the starting point of the aneurysm? The only symptom is pain, and the pain is in my opinion caused by the pressure on the intercostal nerves, and possibly by some erosion of the ribs and cartilages. There are no pressure symptoms of any kind and the aneurysm

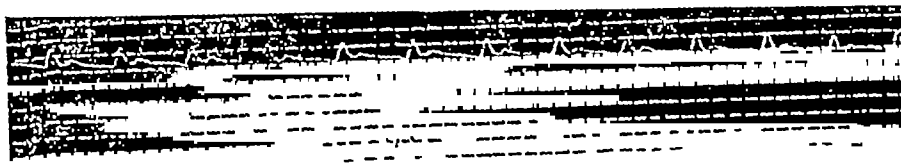


Fig 8

Case No IV—P K, a youth aged about 21 years, was admitted into the jail as a transferred prisoner. He was found to have a vibrating tumour with loud murmurs to the left of the sternum. The tumour being most prominent in first and second left inter costal spaces. He was sent straight to the hospital

History—Perfect health up to four months before admission. At this time he got into a scrape with the police, and in struggling to avoid capture, he received a heavy blow in the region of the present tumour from a baton. He was a vendor of liquor in private life, and was employed at newar weaving in the jail from which he came. He denies ever having had syphilis, but admits gonorrhoea. He states that the tumour is slowly increasing in size

PHYSICAL EXAMINATION

Inspection—There is a distinct bulging of the chest wall on left side of sternum, over second, third and

appears to be more diffused than when I first saw the patient about six weeks ago

I believe the aneurysm starts from the ascending portion of the aorta, which lies between the reflection of the pericardium and the origin of the innominate artery. If it arose from the part inside the pericardium, it would not present on the left side of the sternum. If it arose from the actual arch (transverse part), I think there would be pressure on the left innominate vein, left recurrent laryngeal nerve, or trachea. No evidence of any of these being present, I think the transverse arch may be excluded. The aneurysm of the descending aorta would probably press on the vertebra. This is probable therefore that the part which lies between the origin of innominate and the limit of the pericardium is the place of origin of the aneurysm. The other conditions of disease in the heart, I believe, must have existed prior to the aneurysm. The aortic orifice seems to be stenosed and the mitral valve incompetent. Compensation appears so far to be perfect

I have taken pulso tracings (Fig 8) of both radials and can find no appreciable difference in the tracing. This, I think, bears out the idea of the origin of the aneurism, as, in this situation, the pulses would both be equally affected, whereas a little further on the origin of the innominate, and so the pulsation in it would not be affected by the aneurism, while the pulse in the other side arteries, that is left common carotid and left subclavian, would be affected. This aneurism appears to have been caused by trauma. I do not know if this is a recognised cause of aortic aneurism, but I can think of no other cause in this case. The treatment being tried is complete rest and iodide of potash. It is doing but little good, and I think the prognosis is entirely bad.

Case No V—B D, a Bengali boy, aged 15½ years, gives a history of having had an intermittent fever 14 years ago. The fever lasted off and on for over a month, sometimes intermitting for two or three days.

Whilst convalescent from this fever the present trouble in his heart definitely commenced. He believes the fever to have been malarial as he was treated with quinine. He stated that his spleen was enlarged at the time of the fever. He is a student, and has no history of syphilis or overwork. Before his fever he ran and played with other boys, and felt no inconvenience of any kind.

Present state—He looks well and is not anemic, but suffers from marked mitral incompetence. His heart is not noticeably dilated or hypertrophied, the apex beat being in the fifth interspace, just inside the mammary line. The murmur is conducted across the axilla, and is audible all over the back, and very loud between the scapulae. There is at present no failure in compensation. The pulse is about 88 and quite regular. The attached tracing (Fig 9), shows nothing calling for special remark.

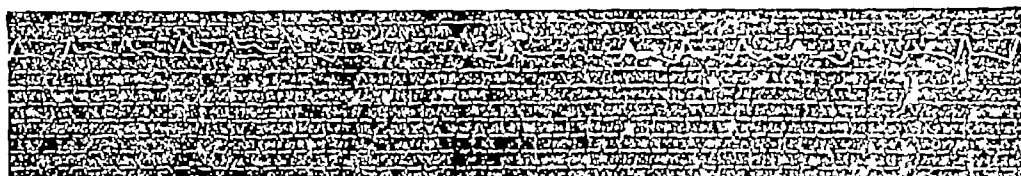


Fig 9

The chief interest of this case appears to be its etiology. I am not aware that malaria, in so young a person at any rate, commonly gives rise to such severe cardiac lesions as the one under notice. I have carefully searched Manson's exhaustive chapters on malaria in his "Tropical Diseases" and can find no mention of it ever doing so. Nor have I myself ever seen such a case.

The only mention of cardiac affections from malaria which I can find is on page 112 where he says, "as a consequence of defective nutrition from prolonged anemia and recurring fever, the muscular tissue of the heart of chronic malarials may degenerate." This boy is not a chronic malarial, and presents no signs of malarial cachexia. He has recently had fever for three days from which he has completely recovered, and during which three days the condition of his heart was quite unaffected.

The disease is almost certainly not congenital as there is no cyanosis, also congenital malformation of, or absence of, the mitral valves is very rare. The history of this case is singularly clear and explicit. The boy is highly intelligent, and gives a very definite account of the onset of his malady. As regards treatment, I am giving iron and bitter tonics, with occasional doses of hydrobromate of quinine. The prognosis is, I believe, quite good as compensation is well established, and the

heart will probably continue for some years to come to adapt itself to the new condition of affairs. I have recommended him to return to his home and resume his ordinary studies, avoiding overwork.

Case V—In marked distinction to the last case as regards any doubt as to its causation, is the case of R K, a Hindu child aged 12 years. Nine months ago there was rheumatic fever, a disease which I do not think is common among natives of India, but which certainly affects them.

This case is principally of interest from the fact that already the heart is enormous as illustrated by the dulness shown in the accompanying diagram (Fig 10). Compensation has failed. He not only has got mitral incompetence, but also a tricuspid systolic murmur with a large pulsating liver. Pulmonary oedema and venous pulsation also pitting of the pre-tibial tissues, and of the tissues on the dorsum of the feet. His respirations are 56 to the minute and his pulse 116, and irregular. I have been unable to show a tracing as I have lost sight of the patient, who I fear must be dead. If he is not dead, the prognosis at any rate is, I believe, that he will very

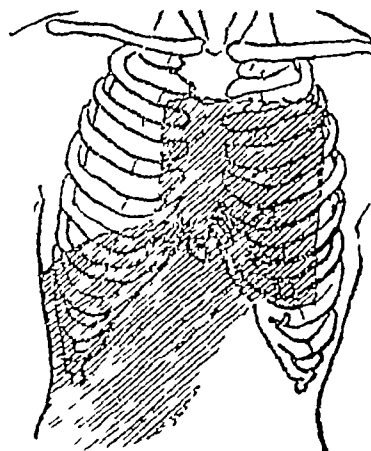


Fig 10

soon die. His dyspnoea and general symptoms improved for a while under small doses of strophanthus.

I add a few remarks on a case of temporary irregularity of the heart which came under my notice some months ago in a hill station.

The case was that of a lady who had recently come from the plains. She had been out "calling" and had walked a good deal on the morning I saw her.

I was called in for what was said to be "palpitation" of the heart. On examination, I found the heart indescribably irregular. Many of the systolic efforts produced no radial pulse. The beats were grouped, occasionally into twos and threes. The sounds reduplicated and in fact so mixed up together that any attempt to describe the state of affairs would be hopeless. Her pulse was very irregular. There was no history of cardiac trouble. All she complained of was that every now and then her heart would give a tremendous thump against the chest wall, which was literally what it did do.

I gave blue pill followed by a saline. Light diet and digitalis. On the third day the heart became perfectly regular, and has, I believe, remained so ever since. I have examined the heart on several subsequent occasions, and can find no evidence of cardiac derangement.

NOTES OF A CASE OF SCARLET FEVER IN RANCHI, CHOTA NAGPUR

By R. H. MADDON, M.B.,

C.M.T., I.M.S.,

Civil Surgeon, Ranchi

On 16th August last I was called to see H. L., aged six years, the son of an English missionary in Ranchi.

The history of the case was that he had been in his usual health until the previous day when he complained of soreness of the throat and a tired feeling. He, however, went out and played with other children as usual. His temperature that evening was 101°F .

The next morning, 16th August, when first seen by me, he had a little fever, and on examining the throat I found congestion of the tonsils, fauces and pharynx, but I had no suspicion of any possible further developments.

During the afternoon he vomited five or six times, and was very restless, and towards evening his mother noticed that his face was flushed, but thought it was simply due to the fever as the temperature was 104°F .

Next morning, 17th August, the face was flushed a bright scarlet, and a bright scarlet rash, hyperemic in character and without any distinct papular formation, covered the whole body down to the knees. The rash consisted of minute points surrounded by hyperemia of the skin, and was continuous in all parts of the body, excepting on the knees and elbows, where the patches were more discrete and had almost a papular appearance. The rash was thickest on the chest, loins and bend of the elbow.

The tongue was covered with a white fur in the centre with red edges. The fauces and tonsils were swollen and a bright red colour, also the pharynx.

On 18th August the rash was still well marked, the fur on the tongue showed a few papillae through it, producing a typically strawberry appearance.

On parts of the body where the rash was thickest, small vesicles (sudamina) appeared and on the elbow one or two rather larger vesicles containing a watery fluid. These disappeared in a day or two.

19th August—Rash began to fade from the face, the right knee was found swollen and painful.

20th August—Rash had disappeared a good deal except on the loins, elbows and knees where the skin appeared somewhat thickened. Pain and swelling of knee much better. A slight roughness was noted on the face.

21st August—There was distinct fine desquamation on the face, and it had also started on the trunk. The tongue was cleaner, and the redness of the throat was beginning to fade.

22nd August—As before, but the right hand was painful, and the patient could not hold a cup.

23rd August—The rash had practically disappeared.

The rash was most plentiful on the 16th, 17th, 18th August, and during these days the patient was very restless and had some delirium at night.

Desquamation began on the sixth day and was not complete for five weeks, that on the trunk was in the form of fine scales, on the extremities it was much coarser, while on the hands and feet large flakes of skin peeled off.

The boy is rather a delicate child and has hypertrophy of both tonsils and is subject to sore throats, which, I believe, was the cause of the temperature keeping up rather longer than might otherwise have been the case.

After the fever went away convalescence was rapid, and he has recovered his usual health.

There has been no albuminuria.

Source of infection—This is an extremely difficult question, and in spite of all enquiries, I cannot come to any very definite conclusion on the subject. About five weeks before the boy was taken ill a box of "work" came from England, and was unpacked in the house. Some of the articles were sold, and the rest kept in a box in the house.

I think it is very possible that some articles may have contained the infection as the various articles are collected from many parts of England, and sent out for sale in this country. There have been no other cases, although many people in the station bought some of the contents of the box. I can only suppose that some one or more of the articles which were not sold may have held the infection, and the boy may have had access to them shortly before he was taken ill. There are two younger children in the house who have remained quite well.

There is no doubt that even letters can carry the infection of scarlet fever as many such cases are known*. One case specially has come under my notice in the case of a sister of my wife who while living in Canada, at the time that some of her children were suffering from scarlet fever, wrote to a sister in Jamaica. Very shortly after the arrival of the letter in Jamaica one of the children in the house developed scarlet fever, although the existence of scarlet fever in that part had been unknown for several years.

I have thought it advisable to offer these notes for publication as the disease is so rare in India, but there can be no doubt that it does occur, at times even in distant stations such as this, and that the infection can be carried to very great distance and produce isolated attacks.

* Since the above was written it has been ascertained that three cases of scarlet fever had occurred in the house in England from which letters had been regularly written to the patient's parents.

which do not seem to show any great tendency to spread

I do not think that with the above noted symptoms, it would be right to come to any other conclusion regarding the diagnosis or to relax any precaution against the spread of infection

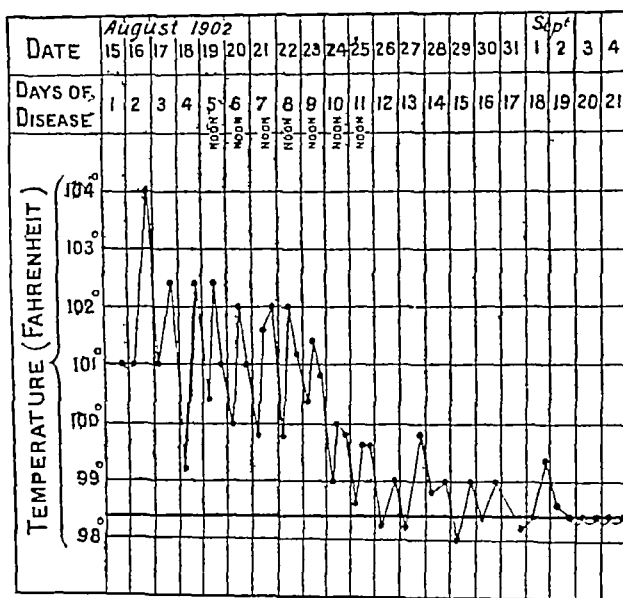
this illustration the absolutely specific relation which the molecule bears to the cell. It is, in fact, a selective action, which is essential in order that the proper nutritive materials may be obtained from the blood stream to supply the special wants of the cell concerned. The atom grouping of the toxin or food molecule, by which the combination with cells takes place, has been called the "Haptophore" (Gr. 'Hapto,' I bind) group. This haptophore group of the toxin molecule must have an identical complex to the food molecule which is necessary for the nutrition of the cell with which the toxin molecule is able to link on. They also have another active group called a "Toxophore" group. This group

A SUMMARY OF EHRLICH'S THEORY OF

The Indian Medical Gazette, December, 1902

NOTES OF A CASE OF SCARLET FEVER IN RANCHI, CHOTA NAGPUR

By R. H. MADDOX M.B.



key to a lock. For each lock there is a special key which alone is capable of fitting it and any other key would be useless for that purpose, hence we see from

* A paper read at August Meeting of Bombay Medical and Physical Society

When, however the toxin consists of a very highly complex proteid molecule, as for example the contents of a living cell, e.g., a bacterium, then obviously the arrangement must be much more complex. In this more complicated case the fixation of the molecule is only a preliminary condition for the cell nutrition

NOTES OF A CASE OF SCARLET FEVER IN RANCHI, CHOTA NAGPUR

By R H MADDON, M D,

CMT, I M S,

Civil Surgeon, Ranchi

On 16th August last I was called to see H L, aged six years, the son of an English missionary in Ranchi

22nd August —As before, but the right hand was painful, and the patient could not hold a cup

23rd August —The rash had practically disappeared

The rash was most plentiful on the 16th, 17th, 18th August, and during these days the patient was very restless and had some delirium at night

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I do not think that with the above noted symptoms, it would be right to come to any other conclusion regarding the diagnosis or to relax any precaution against the spread of infection

A SUMMARY OF EHRlich's THEORY OF IMMUNITY *

By E D W GRIEG, M B, D SC (EDIN'),

CAPTAIN, I M S

(Research Laboratory, Bombay)

THE explanation by a general principle of the various facts and phenomena embraced under the heading of immunity has to a large extent been accomplished by the extremely important work of Ehrlich. It will be, therefore, not without advantage to consider in outline the main features of Ehrlich's theory. It is impossible in this paper to enter into all the extremely interesting experiments by which he supports his various statements. In this connection I shall endeavour to summarise the chief features of Ehrlich's theory of immunity as related by him in his various recently published works.

Taking the subject as it naturally presents itself, the first point to be considered is the action of the toxin. The action of most toxins, as opposed to the action of chemical poisons, is characterised by an incubation period, which cannot, by any increase of the dose, be abolished. A few substances, the action of which is not marked by an incubation period (snake poison, poisonous substances of sera &c.), are shown, however, to belong to the toxins by their ability to produce antitoxins. From this peculiarity of the toxins it may be concluded that their action is essentially different from the action of the other poisons. The essential action of the toxin is a specific chemical combination with the protoplasm of certain cell areas. Other poisons, the alkaloids for example, have also definite laws for their distribution in the organism, but their relation to the parenchyma depends, not on chemical combination with the protoplasm, but upon the occurrence of better solution or looser salt combination.

Such substances, which form a chemical combination with the protoplasm, are called "nutritive." One is accustomed to assign these to the class called "food-stuffs." But it is only necessary to take a step further to understand the essence of toxic action. The toxins which, both as regards their origin and chemical peculiarities, are very closely related to the proteids and their derivatives, form groups, which correspond to the real "food-stuffs," so that they are able to combine with definite cell "receptors" (which are, as their name implies, under ordinary circumstances the channels by which the cells fix and receive from the blood stream their food molecule). The receptors of cells of definite cell areas are so constructed that they take up only the food molecule which is suitable for their nutrition and no other. The relation of the food molecule to the "receptor" of the cell may be more easily understood by comparing it with that of a key to a lock. For each lock there is a special key which alone is capable of fitting it and any other key would be useless for that purpose, hence we see from

this illustration the absolutely specific relation which the molecule bears to the cell. It is, in fact, a selective action, which is essential in order that the proper nutritive materials may be obtained from the blood stream to supply the special wants of the cell concerned. The atom grouping of the toxin or food molecule, by which the combination with cells takes place, has been called the "Haptophore" (Gr. 'Hapto,' I bind) group. This haptophore group of the toxin molecule must have an identical complex to the food molecule which is necessary for the nutrition of the cell with which the toxin molecule is able to link on. They also have another active group called a "Toxophore" group. This group can be altered by certain conditions into a "Toxoid" group (that is, an inactive group) without affecting the 'haptophore' group. This is of great practical importance in producing artificial immunity, because by so altering the molecules, the immunising process may be as effectively carried out and without the customary unpleasant symptoms. This theory, which ascribes to the toxin and the 'food stuffs,' such a "haptophore" group, has quite lately received unexpected support in the fact that a long list of substances which are not at all poisonous but merely nutritive have produced "antibodies." Thus Bordet has shown that different kinds of proteids by their introduction into the animal organism produce "antibodies" which specifically coagulate the original proteids with which they combine. With regard to the fact that definite molecule groups of living protoplasm ("receptors") occasion the binding of the poison, the cause of the susceptibility of the organism is to be ascribed to the "receptors." The total absence of suitable "receptors" for a specific poison would explain the natural immunity of certain species towards certain poisons. Considering more in detail the "receptors" we see, from the classification, that Ehrlich has divided them into certain groups or types, classification of "receptors," &c, which is placed after references. These types are three in number, they are of great practical importance, as each represents a phase in the production of immunity or a branch of the internal metabolism of the cell under normal condition. Let us take the simplest form first which represents the antitoxins. According to Ehrlich's theory the antitoxin formation, which occurs after the introduction of the toxin, is due to the excessive stimulation of these "receptors" which stimulation leads to their over production and finally to their being thrown off into the blood stream. The free circulating "receptors" are therefore the antitoxin. It is evident from their being originally produced under the stimulus of the toxin, that they must possess a complex which will combine with the "haptophore" group of the toxin, they are, therefore, capable of taking up the poison already in the blood stream, and in this way of preventing the "receptors" of the poison-threatened cells from taking it up. This action may be more readily understood by comparing it with that of a lightning rod. The lightning rod protects the building by removing the charge and preventing it combining with the material of the building which is ready to take it up. So, also, the "receptors" circulating in the blood remove the poison and thus protect the cells which would otherwise have readily combined with it and become destroyed. Hence the importance of administering all antitoxic sera, *e.g.*, Diphtheria, Tetanus, or Antivenene, early before the "receptor" of the cells of vital importance to the organism have combined with the poison. This is an example of the receptor of the first type of Ehrlich (see fig I). It deals with the simpler substances, *e.g.*, toxins, Ferments and other cell secretions.

When, however the toxin consists of a very highly complex proteid molecule, as for example the contents of a living cell, *e.g.*, a bacterium, then obviously the arrangement must be much more complex. In this more complicated case the fixation of the molecule is only a preliminary condition for the cell nutrition.

* A paper read at August Meeting of Bombay Medical and Physical Society

A large complex molecule is quite unsuitable for the nutrition of the cell and can only be made so if, by fermentation process, it is broken up into smaller pieces. This will be very effectively carried out if the "fixing agent" of the molecule is also the carrier of a "fermentative" group, which brings the nutritive material into close relationship with the digestion and assimilation processes. Such an arrangement is seen in a considerable number of higher plants of different kinds and forms. For example, the tentacles of *Drosophila* fulfil this function of breaking up and predigesting the large and complex food molecule.

In the simplest form of this arrangement, we see that this complex is placed near to the "haptophore" group of the "receptors" and it itself has an active group, the "zymophore" group which digests the food molecule. This is the "receptor" of the second type and is represented by the agglutinins, coagulins, &c.

But it is to the "receptors" of the third type that the chief functions in cell life fall. They are called "amboceptors" (as opposed to the first and second types which are called "unicepters"). They possess two groups, viz., a "haptophore" group, the function of which is to bind the food or poison molecule, and a "complementophile" group which has the function of attracting from the blood stream a certain substance, which has a ferment action, and through the combination with this substance, which Ehrlich calls "complement," the material is brought under fermentative action. The "complement" (of which there are many types in the blood of each species) is similarly constructed to the toxin molecule. They also possess a "haptophore" group, which combines with the "complementophile" complex of the "receptor," and an active group which corresponds to the "toxophore" complex of the toxin molecule, and which can, like the toxin, be converted in a "complementoid" by heat, &c. To carry the analogy further it may be called "zymotoxic" group.

If an animal be immunised with plant or animal cells (e.g., cholera vibrio) the excessive production and elimination of "receptors" of the third class cause the whole side chain to become detached, which, with the two functioning groups, then floats free in the plasma giving to it its important function known as "Lysogenic" action.

The above analysis explains the phenomena which are seen in the various forms of immunity. The fundamental principles are very clear if we bear in mind the analogous physiological processes met with under normal conditions. We see that "receptors" of the first, second, and third types are the chief seats of the internal metabolism. They are continually being destroyed and renewed, and can, by great over-production, readily become detached and pass into the blood stream. Considering the great number of organs and the many-sided chemistry of protoplasm, it is not to be wondered at that the blood, the representative of all tissues, contains a large number of different "receptors." Up to date we have only learned to know the different kinds of Lyasins, Agglutinins, Coagulins, Complements, Ferments, Antitoxins, Anticomplements, and Anti-ferments.

A point of considerable importance in relation to immunity in regard to the "receptors" is their variation in different species of animals. This variation however is quite comprehensible when we consider that the internal metabolism of which the "receptors" are indicators, shows marked variation in different species of animals. Very important, further, is the great individual variation of the "receptors." This accounts for the variation in susceptibility, certain classes of animals are devoid of "receptors" for a given poison, these are, therefore, naturally immune. Further, in each individual from time to time there is a fluctuation, a rise and fall, of the susceptibility, this fluctuation synchronises

with the renewed production and the destruction of the "receptors." This coming and going of the "receptors" reflects the internal metabolism, which is dependent on a great many external and internal factors. Such occurrences direct attention to the possibility of producing immunity in some cases by the administration of definite "food stuffs." Perhaps we have in some such peculiarity of feeding and tissue change the explanation of a fact, so difficult to understand, viz., that individuals of the same race and species react in such diverse manners to the same infection. However, we are still very far removed from a definite solution of this important question.

Of the three types of "receptors" the third type undoubtedly plays the most important part in pathology and in relation to the bacteriology of certain septicæmic diseases. The action of "Lysogenic" sera depends on this type. These sera may be either "bacteriolytic" or "hemolytic." A great advance was made in the study of "Lysogenic sera" when Belfanti and Carbone discovered the remarkable fact that the serum of horses, which had been treated with red blood corpuscles of rabbits, contained substances which were poisonous for the rabbit, and for the rabbit only. While the serum of the normal horse up to 60 cc could be intravenously injected without harm to the rabbit, a very few cc's of serum from horses previously treated with rabbit's blood proved fatal.

Bordet showed shortly thereafter that in the case quoted there was present in the serum a specific "hemolysin" which dissolved the corpuscles of the rabbit. He also proved that these hemolysins lost their solvent power on being maintained for half hour at a temperature of 55°C. He showed, further, that the blood solvent property of these sera which had been deprived of their solvent power by heat could be restored if certain normal sera were added. By this important discovery in exact analogy was established between this phenomenon of hemolysis and the phenomenon of bacteriolysis as described by Pfeiffer, Metchnikoff and Bordet himself. In the work on the Pfeiffer phenomenon of bacteriolysis it had already been ascertained that the solution of bacteria by specific bacteriolysins was brought about by the combined action of two different bodies: the one, the "amboceptor" which was specific, evolved during the process of immunisation and was stable, the other, the "complement," a very unstable body, which was present in normal serum. The process of solution by the specific lysins may be shown diagrammatically (fig III). We see, therefore, that such a serum is much more complex in its composition than the simpler antitoxic serum. You will appreciate that the production of serum for purely toxic diseases in which the bacteria are strictly localised, e.g., Diphtheria, Tetanus, &c., is a problem which has already been solved, whereas the problem of the future is the production of bactericidal sera for diseases which are essentially septicæmic, e.g., Plague, Typhoid Fever, Anthrax, &c. There are many difficulties to be faced in the production of such bactericidal sera. The immune sera produced by the administration of bacteria are sometimes limited in their operation to certain animal species and are much more inconstant in their action than are the antitoxins. Sobernheim found that anthrax antiserum, obtained by immunising a certain species of animal, protected that species, but was absolutely without action for another species. This circumstance is easy to understand if the complex nature of the "lysins" be borne in mind. The "lysin" ('amboceptor' and 'complement') possesses altogether three "haptophore" groups, of which two belong to the "amboceptor" and one to the "complement." Each one of these "haptophore" groups can be bound by an appropriate "anti-group." Three anti-groups are then conceivable, any one of which by uniting with its own "haptophore"

group of the lysins can frustrate the action of the lysin. Probably the most important of these is the one which can lay hold of the "haptophore" group of the "complement," and so prevent it from combining with the "amboceptor." Ehrlich has succeeded in producing such "anti complementary" bodies experimentally.

Neisser sought to explain Sobernheim's experiments. He was able to determine that anthrax serum failed in mice even if great quantities of fresh sheep serum (i.e., containing excess of "complement") were at the same time introduced. The failure in this case appears to be due (1) to the destruction in the body of the mouse of the "complement" present in the sheep's serum, and (2) to the fact that the "amboceptor" yielded by the sheep does not find in the mouse a suitable 'complement'."

From this it would appear that in the therapeutical application of anti bacterial sera (as those for plague, typhoid fever, anthrax, &c.) to man, success is only to be obtained, if we use either a "bacteriolysin" with a "complement" which is stable in man (homostable complement), or at least a bacteriolysin, the "amboceptor" of which finds in human serum an appropriate "complement." The latter condition will be more readily fulfilled, the nearer the species employed in the immunising process is to man. Perhaps the failure which has as yet attended the employment of typhoid, cholera and plague antisera will be converted into success if the serum be derived from apes, and not taken from a species so distantly removed from man as is the horse, goat or dog. Whatever the solution may be, the question of the provision of the appropriate 'complement' will come more and more into the foreground, for it really represents the centre round which the practical advancement of bacterial immunity must turn. A further question at present attracting much attention is the immunising of the organism against elements standing biologically much higher in the scale than erythrocytes and much less foreign to the organism than the lowly bacteria. This question concerns the cells of higher organisation, e.g., ciliated epithelium, spermatozoa, kidney cells and leucocytes. These substances produce "antibodies" of a complex nature, the origin of which is in keeping with the "receptor" or 'side chain' theory. In the future this immunisation, which at present is of great theoretical interest, may, it is to be hoped, become available for therapeutic application. The idea has been put forward by V. Dünigern of attacking epithelial new formation, particularly carcinoma by means of specific anti epithelial sera. Metchnikoff also formulated the bold idea of being able to delay old age by means of a serum directed against the leucocytes. But if no immediate practical benefit results, we must remember that we are only at the very beginning of the rational investigation of the properties of cells. I may conclude with Ehrlich in his quotation from Bacon, that we no longer find ourselves lost on a boundless sea, but that we have already caught a glimpse of the land which we hope, nay, which we expect, will yield rich treasures for biology and therapeutics.

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A Mirror of Hospital Practice.

HYDATID OF THE LIVER

By A. SILCOOK, M.D., D.P.H.,
LIEUTENANT COLONEL, I.M.S.,
Civil Surgeon, Bilaspur, O.P.

On the morning of 30th August 1902, I was asked by Miss McNeil, M.D., of the American Mission of this station, to see a case in her hospital of obscure abdominal tumour which she had under observation for two days previously.

History of Case—Gobardhan, Chamar, labourer, aged 50 years, resident of Dona village, Sargaon Thana, Bilaspur District, a well nourished, healthy looking man, came to the Mission Hospital on 27th August 1902, complaining of a swelling in the belly. He stated that two and a half years ago he suffered from fever for four months for which he was treated by native remedies and got relief.

His belly then began to pain him over the epigastric region, and continued to do so for about two months when he was again cured by native remedies. After this his belly began to swell and has continued to do so for the past two years. About one and a half years ago he went to the American Mission Hospital at Mungeli, Bilaspur District, for treatment for about 15 days but received no benefit.

Description of case on day of examination, 30th August, 1902—Patient, a well nourished, healthy-looking man, has an oval shaped painless swelling, which moves synchronously with respiration, in the epigastric and umbilical regions of the abdomen. This swelling is roughly 7" in the vertical and 6" in the transverse direction, and presents in the middle line and 1" above the umbilicus a hernia-like protrusion about the size of a small hen's egg. On manipulation it is soft, elastic, moveable transversely and fluctuates freely, a wave being transmitted from one part of it to the other.

On sinking the hand into the abdomen and under the swelling some hard thickening can be felt. On percussion it is painless and dull all over, the dullness being continuous with that of the left lobe of the liver. Both flanks are resonant. Pulse and temperature normal, appetite good.

Diagnosis—Both Miss McNeil and I were of opinion that the case was in all probability one of hydatid tumour of the liver, though neither of us had ever seen a case of this disease before.

We had not of course forgotten the possibility of a distended gall bladder, hydronephrosis or retention cyst. Distension of the gall bladder without jaundice, the common bile duct being patent, is exceedingly rare. In hydronephrosis the tumour would have filled the lumbar region, and the colon would in all probability have been detected in front of it by percussion.

A retention cyst appears never to reach such a size as would enable it to be detected during life.

A cancerous growth was out of the question from the physical characters of the tumour, absence of general symptoms, particularly of pain.

Operation—On 2nd September 1892, an incision 3" long was made through the abdominal parietes in the right semi-lunar line, commen-

cing above at the margin of the 9th costal cartilage, and extending downwards towards the right pubic spine

The tumour was found adherent to the adjacent part of the abdominal wall, and an incision was made into it through this adherent area

This incision was then enlarged downwards as far as required, and the cyst wall drawn forward by means of two sutures one on each side of the incision, and then by placing my hand inside the cyst the whole of its contents were evacuated

The interior of the cyst was well douched with boric acid lotion. Two large drainage tubes were introduced and fixed in position, and the wound dusted with iodoform and boric acid and covered with absorbent dressing

After treatment—The after-treatment consisted of frequent washing out of the cyst cavity with some antiseptic solution, and the maintenance of most absolute cleanliness and perfect drainage

The obliteration of this large cavity has been necessarily a very slow process, and for several days afterwards many pieces of the bile-stained cyst wall and ruptured vesicles continued to escape

With proper management and good nursing, however, under Miss McNeil's careful supervision, it has now almost closed up and the patient feels and eats well

Remarks—The cyst contained numbers of translucent thin walled vesicles (daughter cysts)—many of them as large as a turkey's egg and a large quantity of hydatid fluid—in all about eight pints

Some of the daughter cysts were ruptured, and deeply stained with bile

Many hooklets were found in the hydatid fluid

The hernia-like protrusion, seen on first examination of the tumour and before operation, was found to be one of the hydatid vesicles—daughter cysts—that had protruded through a thin part of the cyst wall

DEATH FROM SNAKE-BITE

By W. H. KENRICK,

CAPTAIN, I.M.S.,

Officiating Civil Surgeon, Hoshangabad, C.P.

A HINDU girl, aged 12 years, was admitted into hospital at 11-30 P.M. on August 9th, 1902. She was brought from a village five miles away, and the history of the case is as follows: "At about 9 P.M., i.e., two and a half hours prior to admission, she went into a back room of her father's cottage to fetch a cake of cow-dung, and while taking one off the heap, something bit her on the right thumb. Her father ran in with a light and then saw a snake crawling

away, he afterwards pointed out the Bungarus Fasciatus, from among a series of plates of poisonous snakes hung up on the hospital walls as being similar to the snake which had bitten his daughter. A ligature was applied to the wrist of the girl about quarter of an hour after she received the bite, but this was subsequently removed by herself on her way to the hospital. Upon her arrival at the hospital 40 c.c. of Calmette's antivenom were injected into the flanks, and free incisions made into and around the fang marks, which were two well-marked punctures on the dorsal aspect of the first interosseous space, a solution of chlorinated lime was injected into the tissues round the wounds, hot coffee was administered and warmth applied to the extremities. She was perfectly conscious the whole time, and when I saw her at 2 A.M., her condition was as follows: Eyes were sunken, expression anxious, great restlessness, every minute or so throwing her arms above her head and turning from side to side, she answered questions, her speech being rapid and jerky, knee-jerks normal and no paralysis, she complained of slight pain at the site of the bite only. Breathing was rapid, shallow, thoracic in type, 42 per minute and every sixth inspiration or so was slow and long drawn out. Pulse was small and rapid, readily compressed, and 170 per minute. Heart sounds were distinct and clear, though weak, no increase of dullness, apex beat could not be felt. No enlargement of spleen or liver, tongue was dry and coated, and there was occasional vomiting. Temperature in axilla 97° F and in rectum 103° F.

With the exception of the four fingers the whole of the right hand, arm and breast were tensely swollen, the upper limit of the swelling being well defined by the line of attachment of the pectoralis major and deltoid to the sternum, clavicle and scapula. The swelling was hard, tense, cold to the touch, and did not pit on pressure. Beyond a slight trickling of lake coloured non-coagulable blood from the incisions, there was no hæmorrhage. The girl gradually became more restless and died suddenly at 2-30 P.M.

The noticeable points in the case are the difference in the temperature in rectum and axilla, the localised nature of the swelling and the type of respiration, on the whole, the symptoms point to an action of the poison on the circulatory rather than the central nervous system, and are similar to those resulting from severe hæmorrhage. Probably in this case the effect produced by the poison was disorganisation of the blood corpuscles, leading to some alteration in the walls of the capillaries, thus giving rise to a "serous" hæmorrhage into the tissues, the symptoms are more similar to those of the second group of daboia intoxication, as described by Captain Lamb, I.M.S., than to those of krait poison.

THREE CASES OF SNAKE BITE (DABOIA RUSSELLII)

B. C. C. MURISON,

LIEUTENANT, I. M. S.

THE following cases are of interest —

Case 1—Havaldei P. B., 9th Bombay Infantry, was admitted into Hospital for snake-bite on 5th July 1902, at 3-15 A. M.

History—The Havaldei stated that on leaving his house at about 3 A. M. he heard a hissing noise and simultaneously felt a bite on the back of his right foot, it was dark at the time, and he could not see the reptile, but concluded that he had been bitten by a snake. He called out to a sepoy to bring a lamp, and after a few minutes' search they found the snake and succeeded in killing it. The Havaldei then tied three or four ligatures of strips of cloth tightly above the bite and went to Hospital. I was sent for and saw the patient at about 3-45 A. M. I found that there were three small fang punctures on the dorsum of the right foot, a little below and in front of the external malleolus, the punctures were smaller than the size of an ordinary pin's head and were less than a third of an inch apart from each other. There was a certain amount of swelling round the bite, and the patient complained of pain for about two inches round it, there were no other symptoms. I had the punctures cauterised with silver nitrate. I then examined the snake, but could not form a definite opinion of its species on account of it being a young one. Seeing that the pain did not extend much above the bite, I had the ligatures gradually removed—the lower one first and so on upwards—the last one being removed about an hour and a quarter after the patient had been bitten. About quarter of an hour after the removal of the last ligature (i.e., an hour and a half after the bite), the patient complained that the pain was extending up the leg, and a few minutes later intimated that it had reached the groin, accompanied by pins and needles sensation. I then had 7 cc of Calmette's antivenime injected into the right calf and near the punctures. In about 10 minutes after the injection the pain and the pins and needles sensation began to disappear from the groin downwards, and in 20 minutes all had ceased except in the vicinity of the bite. At 7 A. M. the patient was apparently fairly comfortable, the bite, however, continued to be painful, and the part round it was slightly swollen. At about 9 A. M. the patient began to have fainting fits at intervals of ten minutes or so, each fit lasting about a minute, he was also very drowsy and complained of giddiness, and on account of which he was unable to stand, he vomited a great deal and could not keep any food down. Pulse 96, somewhat irregular, small

volume and very weak, heart sounds very feeble, but no murmur could be detected. Temperature 100.2°F. The patient continued in this state the remainder of the day. Stimulants, sedatives for the stomach, pure milk, ice, &c., were prescribed.

6th July 1902—The attendants reported that it was with some difficulty they succeeded in keeping the patient awake during the night. Pulse and heart much the same as yesterday, but patient is weaker, the fainting fits continue. Temperature 99.4°F.

7th July 1902—An improvement has set in, fainting fits now occur at intervals of about an hour, pulse 80 and stronger, heart sounds stronger, vomiting has ceased, and the patient is now able to keep down light milk diet, and the giddiness has disappeared to a great extent.

8th July 1902—Patient decidedly better, had but one fainting fit yesterday, a certain amount of swelling exists round the bite and which is still painful. Pulse 76 and stronger. Heart sounds the same as yesterday. Can walk with the aid of a stick, but still feels somewhat light-headed, although better in this respect than yesterday. A mixture containing iron, quinine, arsenic and strychnine has been prescribed.

12th July 1902—Patient is much better, is now able to walk about and takes his food well. Pulse and heart are still somewhat feeble, there is a pronounced soft blowing murmur to be heard at the apex bent.

19th July 1902—The murmur has disappeared. Patient feels stronger, but still unfit for duty.

24th July 1902—The patient to-day proceeded on two months' sick leave.

Case 2—A sepoy's wife was admitted into hospital for snake-bite on the 5th July 1902 at 4-15 A. M.

History—The woman's husband stated that his wife had been bitten on the back of the right hand by a snake at about 1 A. M., and that on hearing of it he went out of his house for the purpose of killing the snake, but before he succeeded in doing so the snake managed to bite him too on the sole of the foot near the ball of the great toe. He did not bring his wife to the hospital, as she did not complain of any ill-effects then, nor yet did he himself feel any either. At about 3-45 A. M., however, his wife awoke feeling the bite painful, and on finding her hand swollen, she became somewhat alarmed and asked her husband to go to hospital for medicine. I was treating Case No. 1 at the time the man reached the hospital, and I advised him to bring his wife to the hospital. At about 4-15 A. M. I examined her at the hospital and found three fang punctures on the back of the right hand between the base of the thumb and index finger, and a slight swelling of this part. The punctures were about one-third of an inch

apart from each other. The woman complained of severe pain in the back of the hand and slight pain in the arm as far up as the middle of the upper arm. I had the bite cauterised with silver nitrate and 3 cc (all that I had left on hand) of Calmette's antivenine injected into the back of the hand above the bite. In about a quarter of an hour the pain had all disappeared except a little round the bite. At 7 A.M. there was slight swelling and pain at the back of the hand, otherwise the woman felt quite well. In four days she was discharged from the hospital, the swelling and pain referred to having gradually disappeared in that time. On examining the snake I found it to be identical with the one that had bitten Case No. 1. This woman was about six months' pregnant, and the antivenine did not apparently upset her in any way.

Case No. 3—Naik S.A., 9th Bombay Infantry, was bitten by the same snake which had bitten Case No. 2. There were two small fang punctures about a third of an inch apart, but there was no swelling, and the man did not complain of any pain. No treatment.

I sent the two snakes to the Research Laboratory, Bombay, and received the following reply—"Both the snakes are the young of *Daboia Russellii* and not many days old and therefore harmless."

Remarks—The first two cases do not unfortunately prove definitely that Calmette's antivenine is efficacious against the venom of *Daboia Russellii* as (1) the snakes in question were very young, and (2) I had not any antivenine on hand to inject into the first case when the symptoms of fainting, vomiting, drowsiness, &c., came on. There is, however, in my opinion, no doubt, that the serum had some beneficial effect, as, after it had been injected in the first two cases, the pain disappeared from the limbs thus treated, and the pins and needles sensation ceased in the leg of the first case.

A CASE OF THROMBOSIS OF THE MIDDLE CEREBRAL ARTERY AFTER NORMAL AND ASEPTIC LABOUR

By GURU PRASAD MITRA, M.B.,

Assistant Surgeon, Medical School, Dibrugarh, Assam

Now Bothi, a Hindu female, *æt* 30 years, was delivered of a dead female child at the Dibrugarh Dispensary on the 28th June last. The patient left the hospital on the 30th June at her own request in a good, healthy condition. She was brought back to the hospital on the 6th July for treatment of the following symptoms—

On admission—The patient was in a semi-conscious state. Pulse thready, respirations hurried, the temperature 97.4°F, the patient's

condition rendered a systematic and complete physical examination impossible. A vaginal examination was, however, made which disclosed no foul discharge, no blood clots, and no signs of sepsis. A vaginal douche of a weak solution of permanganate was, however, administered, and an oil and soap-water enema given.

The next morning, the patient's condition was still worse. There was a conjugate deviation of the eyes to the left. Both the forearms were flexed on the arms and resisted all attempts at extension. The left pupil was dilated. There was no hyperæsthesia nor paræsthesia anywhere, and the patient became completely unconscious. The condition of coma gradually deepened, and she expired on the 8th July at night. No marked signs of paralysis could be detected before death. But some cerebral lesion was conjectured.

The *post-mortem* examination which was held next morning revealed the following conditions.

The uterus, about 1½" above the symphysis pubis, its walls hypertrophied. The endometrium smooth, except over the placental insertion (on the left side of the body of the uterus) where the mucous membrane presented a very slight velvety appearance. The condition of the uterine cavity was perfectly aseptic and healthy, the tubes healthy, the ovaries healthy, and each contained a fine corpus luteum. No signs of perimetritis, nor of pelvic cellulitis, nor of peritonitis.

The kidneys, the spleen, the liver, the lungs were found healthy.

The pericardium was found healthy, and contained about an ounce of serous fluid. There were some fatty deposits on the surface of the heart and the muscular substance of the heart pale. Both the right and the left auricles contained dark coloured clots (evidently formed just before or at the time of death). The endocardium and the valves perfectly healthy. The walls of the main arteries healthy.

The meninges of the brain were found healthy. The branches of the middle cerebral artery on the right side ramifying on the side and over the cortex of the brain were found congested. On following the main artery downwards, it was found thrombosed at the base of the brain where it is lodged in the sylvian fissure (just where that fissure turns over the side of the brain) for about ¾".

The case is worthy of record as it illustrates that the mere state of blood in the puerperium is such as to render it apt to congregate independently of any diseases of the circulatory apparatus, or of any conditions of sepsis.

My thanks are due to Major E. A. W. Hall, M.B., C.M., Superintendent, Berry-White Medical School, for his kind permission to bring the case to the notice of the profession.

THE
Indian Medical Gazette
DECEMBER, 1902

AMERICAN VIEWS ON HEATSTROKE

AN interesting report on 92 cases of Thermic fever which were treated in the summer of 1901 at the Pennsylvania Hospital is published in *The American Journal of the Medical Sciences* (for September 1902). The writers are Dr Morris Lewis and Dr F. A. Packard, in whose service the cases occurred.

During the first week of July 1901, over 1,000 cases, due to heat, were admitted to the wards, and the 92 cases reported on, include all of them showing a temperature of over 100° F. The atmospheric temperature during the first three days of July was 100° F, 102° F, and 105.4° F; these days also showed a high humidity. Most of the cases reached hospital in the afternoons, between 3 and 5 P.M. Thirty-one of the cases were females and 60 males, the ages varied from 7 months to 70 years, only six of the total number were negroes, "emphasising the well-known immunity of this race." Of 90 cases in which regular temperatures were recorded, 24 cases were under 101° F as a highest temperature, 18 cases under 103° F, 20 cases from 104° to under 107° F, 14 cases at 108° and 109° F, 2 at 110° F, 8 at 111° F, 3 at 112° F, 1 at 113° F and two unknown. No case with a temperature under 106° F died, and no cases with 111° F or over recovered, among the others the mortality was as follows—

Temperature	Cures	Deaths	Mortality of 25 per cent
106° F to 107° F	6	2	33.3
107° " 108°	5	1	20.0
108° " 109°	7	1	14.3
109° " 110°	1	1	50.0
110° " 111°	5	3	60.0
111° " 112°	0	3	100.0
112° " 113°	0	1	100.0

The total number of deaths was 13, or 14.4 per cent.

The following symptoms are recorded —

Convulsions of a severe type in fourteen cases, especially marked in cases over 106° F. Patients with 106° F and over were usually unconscious on admission, marked cerebral excitement, even after the temperature had fallen, was noted in a few cases. In a few cases the conditions of the pupils were noted, viz, in five cases "contracted," and in two cases, with temperatures of 110°, the

pupils were dilated. Nystagmus was noted in one case. In five cases examined the kneejerks were totally absent, all the patients being unconscious. Two patients claimed to have become impotent after recovery from the attack. Urine was only examined in ten cases, and in four albumen in varying amount, with granular casts, was found. In two cases sugar was found, but one was a diabetic, and in another the glycosuria was only temporary. Fifty per cent of the severe cases gave an alcoholic history. The blood was examined in 17 cases with the following results, which are thus summarised by the authors —

"Among these, curious irregularities were found, making it impossible at present to do more than summarize them. In bleeding patients with sunstroke the dark color of the blood, not resembling ordinary venous blood, was noted. We had, therefore, hoped to obtain some facts regarding spectroscopic changes. Owing to the impossibility of at once obtaining the necessary apparatus, a spectroscopic examination was made in only two cases, and in both of these the absorption band of haemoglobin was found alone although the appearance of the blood led us to think that possibly methaemoglobin might be present. The specific gravity was estimated in four cases, in three the specific gravity was 1.055, 1.058 and 1.057, respectively. The fourth showed a specific gravity of 1.074. This latter blood was from a patient who died two hours after admission in spite of everything that could be done for her. In this same patient the haemoglobin value was 83 per cent, and the erythrocytes numbered 5,040,000, it being the only case in the series in which the erythrocytes were increased. The haemoglobin was estimated in five other cases and amounted in these to 67, 85, 68, 74 and 69 per cent. The absence of constant high specific gravity and of increase in the number of the red cells rather surprised us, as we expected to confirm some of the results reported by others in this direction. The number of the leucocytes varied greatly. All but three of the severe cases examined showed at some time a high leucocyte count, but there was considerable irregularity in the time and duration of the rise. In some cases a leucocytosis of from 12,000 to 13,000 was noticed on admission. The increase was usually in the polymorphonuclears. In most of the cases, in which there was a primary rise in the number of leucocytes, followed by a fall, and then a second increase in number, delirium tremens developed. No experiments regarding the toxicity of the serum for animals were made.

"These results surprised us, especially as at the time when they were being obtained in the Ayer Laboratory of the hospital we felt justified in believing that the injection of large quantities of normal salt solution was saving some lives. To this view we still adhere."

As regards treatment, the mild cases were simply treated with rest in a cool ward, the ice-cap and diffusible stimulant drugs, the more

severe cases were rubbed with ice until the temperatures approached normal, none of these died. Cases between 106°F and 108°F numbered 14, three died. All the other severe cases were treated in a large tent, the fly was kept moist by a hose of water playing on it, and inside two large electric fans were working. In a few cases the hose was turned on to the patients, but it was noticed that, while this reduced the temperature, it increased the tendency to convulsive movements, the bath tub was found impracticable for so many patients, and rubbing with ice was found very effective.

The authors also discuss the advisability of bleeding in cases of sunstroke, as a routine measure they *by no means* advise it. "In certain cases, however, when, with a fall in temperature, there was not a corresponding decrease in the other grave symptoms, as well as during the existence of high temperature in desperately ill cases" it was found to be of benefit. Bleeding was done in eight cases, and four of them died, but it must be remembered it was only done in very severe cases. The amount drawn varied from 6 to 20 ounces.

The employment of a normal saline solution was introduced on purely theoretical grounds. Hypodermoclysis was used in five cases of the severest type, and only one died, this was found too slow a method, and intravenous injection of normal saline solution was employed in ten cases, four of which died.

In the same journal (pp 485—520), Dr J M Spellisy gives a valuable and interesting historical account of the study and treatment of heatstroke which, though chiefly based on American experiences, also reviews the opinions of Gordon and Beatson, of the British Army Medical Department, and of Charles Morehead, of the Madras Medical Service, whose *Researches on Disease in India* was published in two volumes in 1860.

It is satisfactory to read two long articles on heatstroke without any reference to the now exploded and short-lived heresy of Dr Louis Sambon about heatstroke being a bacterial disease.

LONDON LETTER

THE HUXLEY LECTURE.

THIS lecture has been established as a memorial to the late Professor Thomas Henry Huxley,

M.D., LL.D., who was educated at the Charing Cross Hospital Medical School, and is delivered there on the occasion of the opening of the winter session. The lecturer this year was William H. Welch, M.D., LL.D., Professor of Pathology, Johns Hopkins University, Baltimore. The previous lecturers were Michael Foster, Vuchow and Lister. The subject of the lectures, as defined by the trust, is "recent advances in science and their bearing upon medicine and surgery," and Professor Welch selected "recent studies of immunity" as his theme. The topic is one which lends itself admirably to the intentions of the founders of the lectureship, for it is in the very forefront of medical science, and its applications and possible applications in medical and surgical practice are, and promise to be, most important and fruitful. No living pathologist is better qualified to expound the facts and doctrines connected with immunity than Professor Welch, in virtue of his great ability and industry, the work he has done and caused others to do in this field, his power of grasping and stating essential issues and his close association with eminent physicians and surgeons in the great institution in which he teaches. The lecture is published *in extenso* in the "Lancet" and "British Medical Journal." It is by no means light reading, but it is full of information of the utmost interest and value regarding the chemico-physical processes of infection and resistance. The worst of it is that this subject has become burdened with a new, prolix and not easily understood, nomenclature, much of it applying to hypothetical substances and activities. Take for example the following: "We may thus speak of somatogenic cytotoxins resulting from the action of bacterial stimuli on cells of the host and of bacteriogenic cytotoxins from somatogenic stimuli, also of somatogenic and bacteriogenic complements." This sentence which embodies Welch's latest hypothesis of the reciprocal action and reaction of the invading parasite and the cells of the host is bad enough, but when it comes to half a dozen jaw-breakers of Greek derivation signifying the same—hypothetical—substance, the inference is very sure that the amount of knowledge actually acquired and of the verbiage by which it is at present expressed (or concealed) are inversely proportionate to each other. Professor Welch, however, made it very obvious that the phagocytic theory of Metchnikoff and the antitoxic theory of Behring are inadequate

to represent all the facts relating to resistance and immunity, and he indicated several paths of research in the complicated and difficult subject, which promise eventually to lead to light and use. He also laid stress on the reconciliation of the humoralist views referred to in my last letter with the fundamental doctrine of cellular pathology. Moreover, though the suggestion is still a very shadowy one, he hinted that the real explanation of the wonderful facts of immunity is to be sought in those attributes of cells which fit them for dealing with ailment. This is a new and striking illustration of the great doctrine that the laws of physiology and pathology are fundamentally the same.

DR MOHENDRA LALL SIRCAR, C I E

I read lately in an Indian paper a report of the annual meeting of the "Indian Association for the Cultivation of Science," at which the Honorary Secretary, Dr Mohendra Lall Sircar, made a speech which affected me profoundly. From this speech I gather that Dr Sircar's health is bad and rapidly failing, and that his endeavours to establish among his countrymen a substantial and abiding organization for the cultivation of science have been abortive. "I can," he is reported to have said, "only give expression to one feeling that has taken overpowering possession of me, and that is a feeling of regret—regret at having wasted life. I have failed in fulfilling a task which I had imposed upon myself." This task was the institution of professorships for the teaching of science. And why did he fail? Not for want of insight, energy, enthusiasm and perseverance on his own part, not for want of sympathy and (wordy) co-operation, but for want of money. His countrymen would not, with two honourable exceptions, contribute to endow professorships or create laboratories. I am afraid this is too often the fate of ambitious and high-sounding projects in India—much tall talk at the inception, no material support, inanition and extinction. In this present instance the case is sad and pathetic. I am no admirer of the homœopathic heresy, as my writings in this journal abundantly testify, and I have more than once deplored Dr Sircar's defection and the estrangement which it caused between him and his professional brethren—a split, the traces and results of which remain to this day, but I verily believe that Dr Sircar's espousal of

homœopathy was honest and grounded on the belief that it furnished him with a fundamental scientific principle, which placed medical practice on a higher plane. It required no little moral courage on his part at the time to break away from his teachers and fellows, and I honour him accordingly. But apart from this, Dr Sircar's efforts to cultivate and commend physical science and research, have been true, worthy and persistent, and I cannot get myself to admit that they are doomed to failure. The thing must come sooner or later, and the man's labours must bear fruit, and his name and work must be perpetuated. But how much better if his aspirations and intentions were realized while he is with us and, if before quitting the scene of his easy triumphs and rare failures, he could experience the satisfaction and joy of seeing his yearnings gratified and his projects accomplished.

THE LATE DR RAKHAL DAS GHOSH

I was very grieved to notice the death of this earnest and gifted medical practitioner at the comparatively early age of fifty-one. I remember him well as a student and Resident Medical officer in the College Hospital, and have frequently been associated with him in the treatment of cases. His amiable disposition, excellent attainments and good practical abilities commanded admiration and regard, and a small treatise on *Materia Medica*, which he sent me not long ago, indicated great literary ability combined with accuracy and remarkable power of analytical condensation. He was a good illustration of the medical adaptivity of the native Indian—especially of the Bengali. The medical profession is fitted to a greater degree than any other to elicit the best traits and qualities of the educated classes and races in India. Rakhal Das Ghosh had not only the power of assimilation, which is so conspicuous a gift of educated Indians, but he also possessed originality and the faculty of holding and improving upon his acquisitions. It is this endowment of initiative, invention and persisting growth which is so essential a condition of professional eminence and success.

THE CRUSADE AGAINST MALARIA

The prevalence of malarial fever at Ismalia has afforded Major Ross an opportunity of putting his theories regarding the causation of malaria to a severe if not crucial test. Ismalia,

though close to the Suez Canal, is situated on mud and sand—on a dry hot desert. The canal and lake are unsuited for the larvæ of the anopheles because they are well stocked with fish. Where therefore do these larvæ find a sheltered and congenial nidus? It appears that though apparently waterless, the hot sandy surface covers a saturated subsoil, and that the removal of the thin sandy soil exposes this subsoil water. Limited removal thus gives rise to pools and puddles which do not communicate with the adjacent waterways, and are therefore in this manner protected from the invasion of fishes. In these pools and puddles anopheles larvæ have been found and the malarial muddle has thus been solved. It remains to abolish these small swamps and tanks, or to destroy the larvæ which inhabit them. Both these things are being done and the reduction or disappearance of malaria by means of these measures is a reasonable expectation.

K McL

16th October 1902

Current Topics.

THE NORWEGIAN REPORT ON BERI BERI

PROFESSOR UCHELMANN recently gave the following account of the labours of the Norwegian Committee for the investigation of beri-beri. We may note that the report chiefly refers to beri-beri on board ship, and there is a strange likeness in the views here put forward to the Norwegian theory of scurvy, put forward in the *Lancet* a couple of years ago by Mr Jackson and Dr Harley, which we commented upon at the time. The following abstract of Professor Uchermann's report appears in the *Journal of the American Medical Association* for August 16th, 1902—

"The material before the committee was based on the replies to certain questions made through consuls or received by members of the committee from master mariners and sailors, the information being obtained from 104 ships in all. These facts enable one for the first time critically to weigh the various views that can be entertained concerning the causes of ship beri-beri. It is evident

1 That the general opinion, in dating the appearance of beri-beri on Norwegian ships to the last decade of the late century and its especial prevalence after the year 1895, is correct

2 That the Norwegian ships and, as far as the small number allows one to draw a conclusion, Scandinavian and Finnish ships are most attacked. The German ships come next in the proportion of cases, while the English suffer very little

3 That the disease appears to be most common on sailing ships. Of the 104 ships attacked there was but one steamer and that had one patient.

4 That the great majority of opinions expressed tend to the belief that inadequate food, and especially much tinned food, directly produces beri-beri, or indirectly furthers it

5 That the drinking water cannot be the cause of it

6 That the disease has appeared on ships where rice has neither been used nor has been on board at all

7 That the partaking of tinned food is not necessarily followed by an appearance of want of nourishment in the patient

8 That lime juice is not a sure prophylactic against beri-beri, though it may exercise a certain preventive influence against the disease or, occasionally, a favourable influence on its course

9 That the foregoing conclusion holds good also with regard to fruit and fresh vegetables, especially potatoes

10 That beri-beri appears on sailing ships on long voyages, though they have departed from a region free from beri-beri (this was the case with ten ships), and though the disease had not previously appeared on board, nor the crew previously had the disease

11 That there is no indication of any rule for the time of the incubation of the disease, such time varying from the first to the one hundred and twentieth day after leaving port

12 That the hydropic form of the disease is the most common in the ships (only three or four cases of the atrophic form are mentioned), while in Japan it hardly amounts to one half the cases

13 That the disease is afebrile

14 That animals are also attacked

15 That in several cases vomiting appears at the very beginning of the disease, but stops immediately the patients come on board another ship and get different food

16 That, generally speaking, fresh provisions, in the form of meat, fruit and fresh vegetables in a short time cure the disease in the vast majority of cases, when it is not too far advanced

17 That symptoms resembling scurvy do not appear

After a critical examination of the theories Professor Uchermann thus concludes. Beri-beri is the oriental name of multiple neuritis and is due to a toxin intoxication by tainted vegetable or animal food. The vegetable form closely corresponds with the Asiatic beri-beri, and is usually owing to the eating of tainted rice. The animal form corresponds particularly with the beri-beri which appears on European sailing ships, and is due chiefly to the eating of tainted tinned food. One may indeed suppose that the beri-beri poison may appear not only in vegetable but also in animal nitrogenous foodstuffs that are or have been undergoing decomposition of a microbic nature as yet undecided. These microbes are probably not specific and in all likelihood are different in the animal and vegetable forms of the disease. Nor need the poisons themselves, from a theoretical point of view, be absolutely identical in both forms, even if they are in all probability homogeneous and in some degree isodynamic. As to the importance of lime juice, potatoes, etc., it may be supposed that the vegetable acids contained in these articles of food enter into compounds with the toxins, generally basic, rendering them innocuous or making them more easily secreted.

In accordance with these conclusions the Committee advises

1 A restriction in the use of tinned food (according to French investigations of the various kinds of tinned food from 70 to 80 per cent contain viable microbes)

2 That fat be made a component part, even if a limited part, in the scale of diet in warm climates

3 That potatoes and fresh vegetables be produced for the whole voyage, ships being provided with a better system of preserving these articles

4 That fresh fruit and fresh provisions be used during the stay in port

5 That on long voyages the quantity of sugar and dried fruit be increased

6 That on long voyages the use of a water filter (Chamberland Pasteur) be enjoined

In addition, careful directions are given as to the quality, purchase, preservation and final packing of the provisions (the food being inspected when purchased and afterwards once a fortnight) and directions concerning how one ought to act should beriberi, scurvy or similar food diseases appear at sea (the nearest port to be sought). Finally, lime juice is enjoined on voyages south of 33 degrees north if the potatoes run short

ARSENIC AS IT OCCURS IN INDIA

In the *Agricultural Ledger* (No 4, 1902) Dr George Watt gives a useful account of the chief commercial facts regarding arsenic in India, which is of interest to the medical man, not only on account of the great commonness of the use of arsenic as a poison, but on account of the recent theory, elaborated by Major Ronald Ross, of the possibility of arsenic being the cause of the peripheral neuritis known in the East as beriberi.

Arsenic is met with commercially in three forms the oxide (white arsenic or arsenious acid), and the sulphides, *viz.*, orpiment or yellow arsenic, and realgar or red arsenic. The vernacular name for white arsenic is *sumbul* or *suka*, of yellow arsenic, *hantal*, and of realgar, *mausil*.

White arsenic does not exist in nature as such, but is obtained by the sublimation of arsenious vapours given off in smelting arsenical pyrites. The sulphides are, on the other hand, natural minerals.

Dr Watt mentions two forms of orpiment, the one used as a medicine or criminally as a poison, and the other for industrial purposes, the former is known in Hindustani as *tarku hantal*.

In India the sulphides of arsenic are obtained from three chief sources, *viz.*, Munsiani in Kumaon, Chitral, and Upper Burma. In the Punjab, it is probable that the chief source is the Chitral mines. The white arsenic is chiefly imported from Hong-kong and the Straits Settlements or from England and Germany.

White arsenic is the form most commonly used in criminal poisoning as well as in the arts. Major Collis Barry in his *Legal Medicine* (p 359) gives a list of no less than 20 uses of this form of arsenic. Its use criminally is, of course, favoured by its whiteness, as it can be mixed without detection in sugars, sweetmeats, milk, bread or rice.

It is worth noting that the Bombay Poisons Act is practically a dead letter as far as prevention of poisoning by this form of arsenic is concerned. This Act required that when in the powdered form it must be mixed "with soot, indigo, or Prussian blue," yet during the past 35 years the Bombay Chemical Examiners have "never met with a case where arsenic was coloured by any of the colouring matters prescribed by the Act."

Industrially white arsenic is largely used in the preparation of leather and of skins, in preserving wooden piles or poles in the ground, for the

manufacture of alloys, and is found in toilet powders, in glycerine, in commercial acids and even in some soils. Orpiment is not only a pigment and a dye, but is the essential ingredient of shellac, it is also the yellow colour of children's toys and of Afandi wax-cloths. It is also largely used in making fireworks, and recently it has been used, mixed with sugar, to poison locusts.

THE STERILIZATION OF CATHETERS

NANCY DE and Hutchings in the *Medical News* summarise their views on the disinfection of catheters in the following words —

(1) An infected soft rubber catheter cannot be completely sterilized by boiling under four and one half minutes.

(2) Mechanical cleaning from all dried pus, coagulated blood or mucus will render sterilization easier and will demand a shorter time to be effective.

(3) Elastic (English web) catheters and soft rubber catheters can be repeatedly boiled for five or more minutes without roughening of their surfaces or diminution of their elasticity and strength.

(4) Chemical sterilization by immersion in a 1:2000 mercuric chloride solution for five minutes does not sterilize any variety of catheter which has become infected, at best only inhibiting the growth of the germs, for if the mercuric salt be precipitated by ammonium sulphide the germs will grow freely when implanted in culture media, as has been shown in some of the experiments.

(5) The results of experiments, as stated in the previous conclusion, indicate that chemical sterilization should never be employed for catheters which are to be retained in the bladder for any length of time, unless subjected to a very prolonged action of the mercurial salt, lest the merely inhibited germs develop.

(6) Should corrosive sublimate be employed for the sterilization of catheters it must be in a concentrated solution, and the catheter must remain in it for a much longer time than the usual period considered amply sufficient in the laboratory, no mere washing with any chemical solution being efficient for an infected instrument.

(7) Formalin vapor will sterilize infected instruments in twenty-four hours, how much shorter time will be sufficient has not as yet been determined, but it is proposed to determine it in the future.

(8) All methods of sterilization commonly employed should be continued for much longer periods than the minimum time required for destruction of germs in the laboratory.

(9) English web catheters can apparently be more readily sterilized by heat than can soft rubber catheters, probably on account of their interior construction.

The Report of the Presbyterian Mission Hospital at Miraj under the care of Dr W J Wanless and Dr J Rutter Williamson, is always of interest, and shows the large amount of good surgical and medical work done in the hospital. Regarding plague Dr Wanless remarks very truly "if people could be persuaded to live entirely in the open air they would practically be free of plague," but the Native of India has a strong objection to fresh air. The new block of the hospital is a fine building, and will have one of the finest operating theatres in India.

The Medical School attached to Miraj Mission is designed to meet the needs of all Missions in Western India, and follows the lines of the Medical Mission school for women at Ludhiana. The curriculum is for three years, and the school grants a Hospital Assistant-certificate, it is, however, a purely Mission certificate.

The Mission also runs a well managed Lepet Asylum.

THE consumption of salt per head of the population is reported in the Salt Department Report to be in Bengal 106 lb annually, in Bombay 113 lb, and in Madras 158 lb.

THE sola pith plant is botanically called *Aeschynomene aspera* (Linn). It appears from Dr. Watt's review of existing information that the manufacture of sola tops originated in Calcutta. Another plant, *Aeschynomene Indica*, is found chiefly in Bihar, Upper India, Bombay and S India. It is not so easy to cut into shapes as the Bengal plant, but is largely used in up-country, especially around Roorki for making tops.

THE following is an extract from a judgment of a first class Sessions Judge (Native) in the United Provinces (Woman charged under sec 317, I P C)—“The Court finds Sheolagan guilty of being the mother of a new-born child, and with exposing the child with the intention of abandoning it.”

DR. G DOCK, of Michigan, has reported a case of amœbic dysentery in a farmer, who had not been out of his native State for nine years. The amœbæ were found in large number. The patient's blood serum was tested by Dr. Flexner, but did not react to Shiga's bacillus, thus adding another case to show the essential difference between bacillary and amœbic dysentery (*A Jour Assoc*, 13th September).

DENGUE, which has been prevalent in the further East and in Burma, has reached Calcutta and Madras.

THE following correspondence has been sent us for publication—

APPOINTMENT DEPARTMENT.

No 719/3A—7

From

The Chief Secretary to the Government of Burma,

To

The Honorary Secretary to the Burma Branch of the British Medical Association.

Dated Rangoon the 22nd May 1902

Sir,—With reference to your letter, dated the 18th February 1902, enclosing a resolution on the subject of the representation of Medicine and Sanitary Science on the Imperial and Local Legislative Councils, I am directed to invite the attention of the Association to Rule III of the Regulations for the nomination of Additional

Members of the Council of the Governor General of India a copy of which is enclosed, and to say that His Excellency the Governor General regrets that it would not be possible consistently with due regard to the multifarious interests concerned to give a permanent place in the Council to a representative of any individual sciences as such.

2 The selection of gentlemen to serve upon the local Legislative Council is governed by similar considerations.

I have the honour to be,

Sir,

Your most obedient servant,

G A DAWSON,

For Chief Secretary

LEGISLATIVE DEPARTMENT

NOTIFICATION

Simla, the 23rd June 1893

No 19.—In exercise of the power conferred by section 1, subsection 4, of the Indian Councils Act, 1892 (55 & 56 Victoria, Chapter 14), the Governor-General in Council has, with the approval of the Secretary of State for India in Council, made the following regulations for the nomination of Additional Members of the Council of the Governor-General of India.

I * * * * *

II * * * * *

III The Governor General may, at his discretion, nominate persons to such of the remaining seats as shall not be filled by officials in such manner as shall appear to him most suitable with reference to the legislative business to be brought before the Council, and the due representation of the different classes of the community.

(Sd) S HARVEY JAMES,

Secy to the Government of India

NOTES FROM CONTINENTAL EYE CLINICS

V—BELGIUM

Brussels, June 2nd.—Visited the Hospital St Jean, Dr Coppez carefully selects his cases for the simple operation, usually preferring the combined method, statistics are not available, but he thinks he gets about two per cent of prolapse.

When the patient has only one eye, Dr Coppez always performs a preliminary iridectomy six weeks before extraction, he considers this a great safe-guard.

Granular Ophthalmia is very common, and for Entropion the operations of Pannus and Snellen are used.

Lachrymal troubles are frequent, and extirpation of the sac is performed,

- 1 When chronic suppuration is present,
- 2 When the sac is dilated,
- 3 When a fistula is present, and
- 4 When probing is difficult or impossible.

The out-patients sit in turn in a chair facing at right angles to the examining surgeon, this chair has one arm only, and that on the surgeon's side, on this arm the patient leans turning his head towards the examiner. The method is convenient in every way.

Brussels, June 3rd.—Visited Dr Tacke's clinique, in this institution, only the really

destitute are attended gratis, all others pay according to their means, and on an apparently graduated scale, it is a purely private institution, managed by Sisters of Mercy, and is clean, well kept and modern in its arrangements, though scarcely up to date. In Brussels, each medical man of any note appears to have his own private clinique on these lines.

Dr Tacke has operated for cataract 1,500 times, and claims to have had no failure as the result of primary infection for several years. I was unable to obtain an analysis of his results. He makes an upward sclero-corneal section, performs iridectomy in nearly every case, lacerates the capsule with a cystotome, in nervous cases he uses chloroform anaesthesia. He strongly advocates the laceration of any secondary membrane fifteen days after the extraction, provided that the eye is then quiet, the motive for this early interference is the greater ease with which the capsule then yields to the needling.

Dr Tacke considers sclerotomy to be indicated in the earlier attacks of acute glaucoma, and in simple glaucoma, which will not yield to "rational and local treatment", he appears to reserve iridectomy for the latter stages of acute glaucoma, he inveighs against the abuse of atropine by Belgian practitioners, and states that he sees much harm result from such abuse.

Amongst other operations, I witnessed one for detachment of the retina, the conjunctiva was freely dissected up over the seat of the detachment, and an incision several mm in length was made meridionally into the tunics of the eye, letting out a dirty-looking fluid, the conjunctiva was then stitched up. The operation did not recommend itself to me.

There is a large amount of Granular Ophthalmia in Belgium, and Entropion calls for frequent operation. Dr Tacke uses a rather complicated procedure of his own.

Ghent, June 7th—Visited Dr Rogman's private clinique. This, like other Belgian clinics of the same sort, has three classes in the first the patient has his own private room, and the fittings correspond with the social position of the inmates, who are of the wealthier classes, in the second class the room is more simply furnished and there are two or three occupants in one room, but these, like the first class, are private paying patients of the medical man, in the third class, on the contrary, the patients are attended gratuitously, and the cost of their maintenance is recovered from the funds of the township to which they belong.

This institution, like most of the eye-hospitals I saw on the Continent, has been adapted for its present purposes, and there is a movement on foot to replace it by a modern building. It is clean and comfortable, but rather overcrowded in the third class.

Cataract—Dr Rogman never performs iridectomy, if he can avoid it, no statistics are available, but he thinks that his simple extractions amount to 90 per cent of the total, and that he is obliged to do a secondary iridectomy for prolapse in about two or three per cent of these cases, he can never remember losing an eye owing to a secondary operation of this nature, the conditions regarded as indicating iridectomy are (1) a tendency to prolapse after the completion of the operation, and (2) an injury to the iris during the section. (?) 150 cataracts (or thereabouts) are extracted each year with a loss of one or two per cent. These figures are from his memory only, as no statistics have been compiled, the patients are kept very quiet for three days after operation.

Cyanide solution, one per 1,000, is used to wash out the lids before operation, and the instruments after being boiled are kept in the same solution till required for use. Dr Rogman operates without an assistant, he inserts the speculum with its arms over the nose, seizes the conjunctiva in the *horizontal* meridian at a spot little below the point of emergence of the knife, and appears to cut out by a straight pull, instead of sawing with the blade, the incision is sclero-corneal, and without a conjunctival flap, very free laceration of the capsule is made with a cystotome, delivery is effected with two spoons, the upper of which is then used to replace the iris, no great effort seems to be made to remove any left cortex, a light figure of 8 bandage is applied over a moist boracic dressing.

For soft cataract Dr Rogman uses Teale's Suction Method, and completes the operation with a rapidity and completeness that are alike admirable, he never operates on two eyes the same day, he never speaks whilst operating, and is the most dexterous cataract operator I have seen operate out of India.

SUBCONJUNCTIVAL injections of saline solution have yielded very good results in choroiditis in cases in which Dr Rogman found all other treatment fail.

He prefers tropacocaine to cocaine, on the ground that the former salt, while not inferior to the latter, either in analgesic powers, or in its influence on the cornea, is decidedly its superior in keeping power, in promptness of action, and in not producing mydriasis, he also considers it safer for subcutaneous injections than cocaine.

For glaucoma Rogman's sheet-anchor is early iridectomy, which he supplements by other operative and medicinal treatment, he insists strongly on the difficulty of deciding beforehand which cases will benefit by operative interference, and he has emphasised in a number of

articles his conviction that simple non-congestive glaucoma may at any time pass over into the congestive variety. He always selects the worse eye for the first operation in bilateral cases, and decides as to the expediency of attacking the second eye by the behaviour of the former one after surgical interference.

R H ELLIOT,

M.D., F.R.C.S.,

Captain, I.M.S.

Reviews

The Practitioner's Hand-book of Diseases of the Ear and Naso-Pharynx—Sixth Edition 1902. BAILLIERE, TINDALL & CO., London.

THIS manual, though written by several specialists, is intended for the use of the general practitioner and the student. The first edition appeared in 1878. This, the sixth or latest, edition is produced under the auspices of Dr H. Macnaughton-Jones as Editor, and also in large part as author, because no less than nine of the fourteen chapters come from his pen. He is responsible for the introduction, examination of the patient, etiology, symptomatology, appliances, affections of the external and of the internal ear, deaf-mutism and tests for malingering, and a useful collection of formulae.

His collaborators are Mr W. R. H. Stewart, who deals with affections of the middle ear, Dr William Milligan, who treats of the complications of chronic suppurative middle ear diseases, Dr H. Tilley, who describes diseases of the nose and naso-pharynx in relation to ear symptoms. An excellent chapter on the anatomy of the ear is the work of Professor Birmingham, assisted by Mr R. D. Joyce. There is also a short chapter by Dr Dudley Buxton on the administration of anaesthetics in nasal and aural surgery. The work contains 182 illustrations and seven plates, which are well executed.

It is interesting to compare the variety of opinions as to the best and safest manner of laying bare the mastoid antrum. In this book Professor Birmingham states that—"In practically every case the mastoid antrum can be reached without endangering any of the structures just mentioned" (the lateral sinus, facial nerve and external semi-circular canal) "by a $\frac{1}{4}$ inch (6mm) instrument sent straight in (i.e., without inclination backwards, forwards, upwards or downwards), at such a point that the hole it makes on the surface shall lie as close as possible to the upper and back part of the orifice of the meatus." Again he remarks that—"The facial nerve is in danger of being wounded if the drill, in tapping the antrum, be directed forwards parallel to the meatus." "The nerve can never be injured by a drill or chisel sent *directly*

inwards—without inclination backwards or forwards, as described above—at any point on the surface of the mastoid behind the orifice of the meatus." On the other hand, in Tieves' *Operative Surgery*, 1891, the instructions are—"The instrument (a gimlet) is bored forwards and inwards parallel with the long axis of the meatus."

"If the instrument be directed inwards at right angles to the surface of the skull at the point indicated, the antrum will certainly be missed, and the lateral sinus almost as certainly opened."

Much the same directions were given in an article in the *Annals of Surgery* a few years later.

MM Broca and Lubet-Barbon, in their book on *Mastoid Abscesses and their Treatment*, 1897, give a prolix description of their method of entering the mastoid antrum. The gist of it is that a small square of bone is removed by four incisions in the bone. "First, the 5-millimetre chisel is applied behind the superior half of the posterior border of the meatus, exactly parallel with the meatus."

"We continue through the upper cut, quite horizontally, to the level of the supra-meatal spine. The third cut will be inferior, situated 1cm below the preceding in the adult, 5 mm in the child, and also exactly parallel with it (the second), and perpendicular to the first. After which we have to remove the little square of superficial bone by dividing the posterior border, which is the dangerous one. To reach it, one slightly inclines the blade towards the meatus, so as to cut a slight bevel, but without realising that parallelism to the surface of the mastoid which Hartmann, Politzer, and Ricard desire."

Quot homines, tot sententiæ! As a matter of fact the mastoid antrum is not difficult to reach by any of these methods, if the surgeon knows the anatomy of the part. At the same time it is distinctly comforting to have some form of director in the meatus, whether one keeps parallel to it or not. In Professor Cunningham's recently-published work on Anatomy Mr Harold Stiles puts the matter most concisely—"In this operation the middle fossa of the skull is avoided by keeping below the supra-mastoid crest, the lateral sinus by keeping close to the external auditory canal and by chiselling obliquely to the surface in opening the mastoid cells, the descending portion of the facial nerve is avoided by not encroaching upon the lower half of the deepest part of the posterior wall of the osseous canal."

The same diversity of opinion exists amongst aural surgeons as to the nature of the incision—straight, curved, or triadate, by one incision down to the bone, or by one superficial to the periosteum, and a second one through it. Then, again, each has his favourite instrument on which he lays stress. Most object to the trephine, Tieves prefers a gimlet and objects to drills,

Broca condemns trephine, gimlet and drill, and adheres with Schwartze to the chisel and gouge, Ballance and Milligan prefer a rotatory burr worked by an electro-motor engine. Even the mallet is variable,—wood, steel and lead, each having its advocates. Specially constructed chisels and gouges of different sizes are the best for the average surgeon, while the aural specialist inclines to evolve some particular instrument of his own. If there is diversity of opinion over the antral operation, there is confusion superadded when it comes to operative measures for reaching the tympanum or its attic. Dr. Milligan's descriptions of these operations might easily be rendered simpler and clearer for the use of the ordinary student or practitioner. As they stand they give the impression of a specialist writing for specialists. Dr. Milligan is either not aware of the extent of Schwartze's work, or at any rate he has not given him due credit as compared with the distinction which he attributes to Schwartze's pupil Stacke. It does not seem to be sufficiently clear to English writers that Schwartze is the master, and Stacke the apt pupil who has advanced and improved on the work of his teacher.

Dr. Milligan states that—"In those cases where there is reason to believe the diseased process is confined to the *attic*, the *iter ad antrum* and the *antrum* itself, the operation designed by Professor Stacke is the one now usually performed." Now Stacke's operation was designed originally for disease of the attic and tympanum as opposed to disease of the antrum and mastoid cell, but as far back as 1897, or earlier, Stacke's own experience was that in 31 out of 33 cases he was obliged to open the antrum after exposing the attic, and in one of the two remaining cases he had cause to regret not having opened the antrum at the time. The essence of Stacke's operation is that he introduces his "protector" into the attic through the tympanic orifice, and upon it cuts away the posterior superior wall of the meatus (*i.e.*, of the attic) until the attic is fully exposed. After this, attention is directed to the tympanum with its ossicles on the one hand, and to the mastoid with its antrum and air-cells on the other. But as the mastoid is usually affected, why not commence your operation by first opening into the mastoid antrum, and then go on to the attic and tympanic cavity? Why put the cart before the horse and render the operation more difficult by commencing with the attic and working back to the antrum and mastoid cells? Stacke's operation is admirable as an exploratory measure in cases where attic suppuration alone is suspected, without implication of the aditus, antrum and mastoid cells, but such cases are comparatively few.

The importance of mastoid abscesses, the measures for laying open the mastoid process, and the dangers to be avoided in reaching the

tympanic cavity, were in a great measure brought to prominent notice by the efforts of Schwartze. Having opened the antrum, and having dealt thoroughly with the morbid conditions of the mastoid, Schwartze proceeded to deal with the aditus, the attic and the tympanum in the manner described by Milligan as the Schwartze-Stacke operation. This procedure is the more natural and simple one for the majority of cases.

Manual of Medical Electricity.—By DAWSON TURNER, B.A., M.D., F.R.C.P., ED., M.R.C.P., London, Lecturer on Experimental Physics, Edinburgh, and Medical Officer in charge of the Electrical Dept., Royal Infirmary, Edinburgh.

London: BAILLIÈRE, TINDALL and COX, 1902. Third Edition, Revised and Enlarged. Demy 8vo, cloth, pp. xx+396, with 168 illustrations. Price, 7s 6d net.

THIS book forms one of the University series of manuals published by Messrs. Baillière, Tindall and Cox, and it is well worthy of its place in the series. The necessity of such a work is shown by the rapid sale of the first two editions, and the present edition is brought fully up to date by the addition of several chapters on Roentgen Rays and Finsen Light.

It is to be regretted that no such book is in general use by our Indian students of medicine; the practitioner appears to think that such refinements as milliamperé meters and rheostats are superfluous, and then condemns electricity as useless when he finds that his patients are not benefited by its application. We certainly sympathise with Dr. Turner when he says that "Electricity is still expected by some to do good when applied haphazard, without any other idea of the strength of current than is afforded by the patient's feelings and the number of cells in the circuit, and for indefinite periods by unskilled persons, and when it does no good it is discarded as useless. We might as well expect indefinite and varying doses of drugs at odd times to do good."

The subject of medical electricity is dealt with in six parts. Part I gives a very complete account of electro-physics, with simple descriptions of all necessary apparatus, so that this part can be read with profit by all who have allowed their knowledge of electricity to grow rusty.

Part II deals with electro-physiology, short but complete accounts of such complex matters as electrotonus, electrolysis and physiological effects of Faradism, &c., being given.

Part III consists of three chapters on electro-diagnosis, special attention being given to the estimation of the electrical resistance of the blood and urine in health and disease, the author considers that the increased resistance offered by diabetic urine to the passage of the electric current is due, for the greater part, to the relatively great diminution of the salts, and

only slightly to the interference with diffusion caused by the viscosity of the dissolved sugar.

Part IV deals with electro-surgery, and the various surgical conditions of the body which have been found to respond to electrical treatment, are indicated. The views of the late Dr J. Duncan on the treatment of aneurisms are given the prominence they deserve, and we note that all the cases of true circoid aneurism treated by this surgeon by electricity have been cured. Strictures are treated of at considerable length, but it is doubtful if the ordinary practitioner will have recourse to electrolysis for the treatment of strictures, except in the case of the Eustachian tube or œsophagus. The chapters on Apostoli treatment are good, and the present position of this system is well described by Dr Milne Murray.

Part V gives a complete account of those medical diseases which have been benefited by electrical treatment, and in this section a full account of the Cystoscope and Urethroscope is given. Part VI is taken up with a description of the apparatus for, and technique of, the application of X-rays and Finson light, with a chapter on the results obtained by the application of these new remedies, but as only seventy pages are devoted to these subjects, it is obvious that they are not treated very exhaustively, however, the description given is practical.

The general get-up of the book is good, the illustrations being clear and print of a fair size, and for a student's manual on Practical Medical Electricity, we can confidently recommend the present edition of Dr Dawson Turner's book.

Death and Sudden Death—By P. BROUARDEL and F. L. BENHAM, London. BAILLIERE, TINDALL & CO., 1902. Second Edition. Demy 8vo, pp. vii and 336. Price, 10s 6d net.

THIS is a second edition of the well-known work by Professor Brouardel, Dean of the Faculty of Medicine and Director of the Paris Morgue. It is translated and largely added to by Dr F. Lucas Benham.

There are few medical men who have the opportunities of gaining the experience necessary to write such a book as this. Dr Brouardel's experiences as Director of the Morgue in Paris are unique, and the result is we have a book of great value to the student of legal medicine. It is in fact such a book as Coull Mackenzie, if his life had been spared, might have written after long service as Police Surgeon, Calcutta.

The volume deals with parts of the subject of forensic medicine which are always inadequately dealt with in ordinary treatises on legal medicine. The first part deals very fully with the phenomena of death, the moment of death, and apparent death, and treats very soberly and clearly on the excitable question of premature burial. A hundred pages are devoted to a full discussion of the signs of death. The second part of the book

is very original, and discusses sudden death due to lesions of the circulating system, the nervous system, the respiratory, and the digestive system, also sudden deaths due to vascular tension, lesions of female genital organs, sudden death in fevers, in hæmophilia, in diabetes, alcoholism, and kidney disease, and the last chapter touches new ground in treating of the causes of sudden deaths of children.

Lecture II on the uncertainty of the signs of death and on premature burial is an excellent review of the subject, and those whose minds have been excited on this question by perusal of stimulant literature may rest satisfied with Professor Brouardel's statement that "we are perfectly justified in concluding that cases of apparent death must be *very rare indeed*."

On the subject of cremation Dr Brouardel urges the only real objection against it, *viz*, that "from the medico-legal point of view, it has a certain inconvenience"—obvious to all. In the chapter on sudden death in children the translator, Dr Benham, lays great stress on laryngismus stridulus as a cause, it will account he thinks "for three out of every four cases of sudden death in children," this affection is very prone to occur in rickety children.

Space forbids us to deal further with this interesting book. It is one we can strongly recommend to the Civil Surgeon in India and to all interested in medico-legal questions.

Manual of Hygiene for use in India.—By CHARLES BANKS, M.D., D.P.H. (Glas.), Protector of Emigrants, Calcutta. MACMILLAN & Co, London, 1902.

THIS little book was originally written by Dr Banks for upper primary schools in India, but has been added to, to meet the wants of students at the Universities of India. Like all small manuals of this kind it consists of more than hygiene in its ordinary sense—for it gives a good deal of elementary physiology in its earlier chapters. This, however, is unavoidable in a book mainly intended for non-medical students. The chapter on impure air is good and even more emphasis might have been placed upon the evil effects of bad air, which is one of the most pernicious and insanitary customs of the Native of India.

The chapter on water is clear, well written, and the illustrations apposite, though we would have preferred to see depicted a microscopic view of some drops of water taken from a foul Calcutta tank rather than from a London cistern.

This leads us to the criticism that the real book on Hygiene for India has yet to be written. If we want to appeal to the Indian school-boy and teach him better things, we must use illustrations and examples which he thoroughly understands. This Dr Banks has endeavoured to do with considerable success.

Other chapters, deal with food, drinks, climate, meteorology, small pox and vaccination rabies, &c. We are glad to see Dr Banks stigmatise the municipal practice of burning sulphur as a disinfectant "a mere farce" The chapters on the effects of intemperance in the use of opium, cocaine, *gunja*, and tobacco are full of sound and honest advice

On the whole, the little book is a good one, and well adapted for the purpose it is intended, but we might have been spared the fearsome pictures on page 125 The evil effects of tight-lacing are hardly necessary to dilate upon in a school-book intended for Indian school-boys

Selected Essays and Monographs—Vol 173
NEW SYDENHAM SOCIETY, London, 1901

THE present volume of the New Sydenham Society is of special interest, as most of the monographs and essays here reprinted are from English sources and are of exceptional interest and value After some papers by the late Dr Braxton Hicks on obstetric subjects, which are of permanent value, we find the essay written in 1840 by Dr George Bodington on the "Treatment and Cure of Consumption" It was far in advance of its time, and emphasised clearly the great importance of fresh air in the management of tubercle of the lungs In 1840 consumptives were closely and carefully confined from a fear of the evil influence of fresh air Against this Dr Bodington in this essay earnestly protested—he called it "forcing them to breathe over and over again the same foul air, contaminated with the diseased effluvia of their own persons," and he urged plenty of food and free exercise in the pure air, especially the drier air of inland districts It is certainly remarkable as the writer of his biographical notice says, "that a county practitioner of 1840 should have anticipated some of the most recent teachings of 1900" He was, of course, severely handled by the reviewers of the essay, and it is only now by the publication of it in the New Sydenham Society's library that full justice is being done to the author's views

All know what Hodgkin's disease is, but few have read his remarkable paper here reprinted from the Transactions of the Royal Medico-Chirurgical Society of 1832 After this come three famous papers by Sir James Paget, the famous one on symmetry, 1841, the one on what is now called Paget's disease of the nipple (1874), and that on osteitis deformans (1876) All these essays are landmarks in medical literature and well deserve to be read by the present generation All who are interested in leprosy will read with interest the paper on Danish Lazaret House by Dr Ehlers of Copenhagen

The volume concludes with a short obituary of Dr Sedgwick Saunders for many years Secretary to the New Sydenham Society, who died in January 1901

Acute Dilation of the Stomach.—By H CAMPBELL THOMSON London BAILLIERE, TINDALL & CO., 1902

Nor long ago we reviewed a useful book on the diseases of the nervous system by Dr Campbell Thomson, who is on the staff of the Middlesex Hospital Medical School

This volume is founded on 44 cases of acute dilation collected by or which have been under the care of the author The condition is seldom met as a primary condition but more often as a complication of some pre-existing disease It often follows on surgical operations and brings about a fatal result in a case which otherwise appear to be doing well Out of 44 cases recorded here, 12 were associated with surgical operations The onset is almost always sudden, the general symptoms being one of collapse

The little volume very accurately sums up the scattered literature of this subject, and is well worth the attention of both physicians and surgeons

ARMY MEDICAL ORGANISATION IN THE FIELD

(Continued from page 449)

12 The corps chief surgeon, with the approval of the Major General Commanding, exercises direct and immediate control over the medical service of the corps, subject to instructions from the army chief surgeon or the Surgeon General He assigns all medical officers to their respective duties in standing order so that, on the march or in battle, they may know and take their posts at all times without confusion The most skilful operators are assigned to the field hospitals He determines, after consultation with the division chief surgeons (and with the assent of the General Commanding) the best sites for field hospitals One of his chief responsibilities during and immediately after an engagement will be to ascertain the needs of his several divisions and transfer medical help from one to the other, should it become urgently necessary He should call for reports of sick and wounded, personnel and material, as often as circumstances permit

The chief surgeon of the division should make himself thoroughly acquainted with his personnel and means of transportation and make the best possible use of them On the battlefield he must see where the needs are most pressing and provide for them As soon as a medical officer has completed his special duties at one place, he should be ordered to other work All spare officers will be wanted at the field hospital after the close of an engagement

The number of medical officers required for the service of the division, front and rear, should never be less than 40, or 4 to every 1000 men, namely, 30 for the front and 10 for the rear In the service of the front, the medical officers will be as follows

- 1 lieutenant-colonel, division chief surgeon
major, commanding the field hospital
major, commanding the ambulance corps
- 3 majors and 4 captains, hospital surgeons, one captain permanent executive officer of the hospital
- 3 captains, commanding the ambulance companies and for duty at the ambulance station
- 17 captains and lieutenants, regimental surgeons, for duty at the dressing stations and the front.

13 Two line officers, not above the grade of first lieutenant, should be detailed in the medical service of each division as acting assistant quartermasters and commissaries, one for duty with the field hospital, the other with the ambulance corps Each should have a mounted sergeant as assistant. Medical officers have but little aptitude for this work, and cannot be spared from their more important professional duties

14 The ambulance corps and field hospital (exclusive of officers) of an infantry division will be constituted as follows —

AMBULANCE CORPS			
Hospital Corps	Hospital Stewards	9	303
	Acting Hospital Stewards	27	
	Buglers	3	
	Ambulance Drivers	36	
	Ambulance attendants	36	
	Packers	6	
	Nurses and cooks	42	
	Orderlies	24	
	Litter Bearers	120	
	Hospital Corps Transport men	Fairier	
Blacksmith		1	
Wheelwright		1	
Saddler		1	
Drivers of—		13	
Subsistence wagons		3	
Baggage, &c , wagons		6	
FIELD HOSPITAL			
Hospital Corps Transport men	Hospital Stewards	7	100
	Acting Hospital Stewards	21	
	Nurses and Cooks	68	
	Orderlies	6	
	Blacksmith	1	
	Wheelwright	1	
	Saddler	1	
	Drivers of—	24	
	Surgical Wagons	3	
	Subsistence Wagons	6	
Baggage, &c , Wagons	12		
Total		440	

Leaving the 4 mechanics of the ambulance corps out of account, each ambulance company will consist of —

Hospital Stewards	3
Acting Hospital Stewards	9
Ambulance drivers	12
Ambulance attendants	12
Packers	2
Nurses and cooks	14
Orderlies	3
Litter bearers	40
Bugler	1
Wagon drivers	3
Total	104

15 Each company furnishes the necessary personnel and material to the brigade to which it is attached. The men should be permanently assigned to their duties, so that they may assume them at any time without delay or disorder.

The personnel of the dressing station will consist, as nearly as possible, of 6 regimental medical officers (two for each regiment) 2 stewards, 6 acting stewards and 16 privates (nurses, orderlies and packers). If there be two stations to the brigade, this personnel is divided as may be needful.

The personnel of the ambulance station will consist of the major in charge of the ambulance corps, the 3 captains commanding the companies, 1 steward, 3 acting stewards and 8 privates (nurses and orderlies). If any portion of the hospital personnel is available (Para 24) or stations are consolidated, these details can be increased accordingly.

The six remaining acting stewards are placed in charge of the litter bearers, two for each ambulance company.

The ambulance corps and field hospital, although distinct organizations so far as their administration is concerned, are interdependent and mutually helpful. They must keep in touch with each other, so that part of the personnel, when an emergency requires it, may easily be transferred from one to the other.

MATERIAL

HAND LITTER.

16 The regulation hand litter of our service is the result of much intelligent study and experience, and, in my opinion, the best in the world for general field work. Although doubtless still susceptible of further improvement, it combines the qualities of lightness, simplicity, portability, strength and safety to a degree not equalled by that of any other army. Wheeled litters have been recommended and are more or less used in all European armies, but they are only possible on hard smooth roads and therefore of doubtful value on or near the battlefield. The litter laid on a frame resting upon a bicycle wheel has also been tried but with indifferent success.

The importance of litters in the service of the front cannot be over estimated, and it should be one of the cardinal principles of our sanitary service that every measure must be taken to provide an abundant supply of them.

AMBULANCE

17 The various kinds of ambulances until lately used in our service were mostly intended for two recumbent patients and otherwise defective. The last pattern, however, is a distinct improvement and by far the best held ambulance ever constructed in this country. Without adding to the weight, it possesses the inestimable and indispensable quality of carrying safely and comfortably four recumbent patients and of admitting them on their own litters, thus saving time and dangerous handling in loading. By letting down both seats or only one, it carries eight men sitting or four sitting and two recumbent. Outside are two brackets upon which litters are carried, these brackets should be sufficiently large to carry two litters on each side. In front is a socket for the ambulance flag (Par 238 A R.)

Besides the regular baggage wagons, I also believe that the Medical Department should have subsistence wagons and surgical wagons, constructed for their own special purposes, so that their respective contents be conveniently grouped in sufficient quantities, each class in its appointed place and instantly accessible.

OTHER MEANS OF TRANSPORT - PACK MULES FOR DRESSING STATIONS HOSPITAL MATERIAL.

18 In the absence of ambulances, or for places where they cannot go, various means of animal transport have been devised. The best known in European armies is the mule litter, chiefly used in France and England, it consists of a pair of couches, one on each side of a mule, seats (cacolets) can be carried in the same manner, or a couch on one side and a cacolet on the other. This means of transport requires strong and specially trained mules, and, on account of its breadth, is inadmissible on many trails, it has never been looked upon with favour in this country.

The two mule litter, or litter suspended between two mules in tandem, has been successfully used on the western plains, but requires many animals and a straight road.

The single mule litter, laid lengthwise on the back of the animal, has also been recommended, but is condemned by the severe jolting to which the patient is mercilessly exposed.

The Indian travois, as improved by Greenleaf and others, is probably, in the absence of wheeled vehicles, our best means of animal transportation but, in my opinion, should be further perfected by making the rear ends of the poles rest upon a narrow two wheeled truck instead of dragging upon the ground, such a truck would be greatly to the advantage of the patient and his assistants, it can be so constructed as to admit of being carried on pack animals. Two travois should be provided for each regiment in the field, to be carried to the front on pack mules in case no ambulances are available.

19 Ambulances should be allowed in the ratio of one to each battalion or squadron, one to each two batteries of artillery, one to division head quarters. The number of horses required for the ambulances (2 to each), orderlies and mounted stewards of the division will be 90, exclusive of officers, who provide their own mounts. The number of mules required for wagons (4 to each) and as pack animals will be 130.

20 Ambulances, if at all able to reach dressing stations, can only do so comparatively late in the action and therefore cannot be depended upon for the large supply of dressings needful there from the beginning. For this purpose light two wheeled carts are used in Europe following each battalion (1,000 men) or regiment (3,000 men). In our service, such carts could seldom proceed far enough to the front, they should be replaced by pack mules, which can follow the soldier wherever he goes. Such pack mules will doubtless be the best and often the only means of transport near the battle field, each animal carrying two chests.* These chests should contain chiefly the simple dressings and other few articles needed at the front first-aid packets, bandages gauze, cotton splints, compresses, tourniquets, diagnosis tags, antiseptics, stimulants and restoratives, but there should be enough of these for at least 200 patients. One or two mules should thus be assigned to each brigade.

21 One subsistence wagon and two baggage wagons should be allowed to each ambulance company. The subsistence wagon carries cooking utensils, mess and food chests, stores for the sick and rations. The baggage wagons carry 3 wall tents for officers, the shelter tents of the hospital corps men, 2 hospital tents and 2 common tents for the ambulance station, a field desk, baggage, utensils, tools, forage, &c.

* The uparojo, although doubtless the best device for loading pack mules is too complicated for the purposes of the Medical Department and should be replaced by a pad or blanket and a plain pack saddle.

22 The field hospital wagon train consists of 3 surgical wagons, 6 subsistence wagons, 12 baggage wagons and 1 field forge. The surgical wagons contain operating tables and all the instruments, sterilizers, medicines, dressings, appliances, &c., required at the field hospital, their contents are so arranged, in chests or otherwise, as to be quickly got out. The canvas camp-wicks 6 wall tents and 3 common tents for the permanent staff, the shelter tents of the hospital corps men, and for each brigade section of the hospital, 1 hospital or conical tent as kitchen, 1 for subsistence stores, 1 for medical stores, and 20 hospital tents for wards, dispensary and operating room. This canvas provides for 4 to 5 per cent. of the command dangerously sick or wounded, and for more if the tents be used to extend wards. There should be on hand cots or spare litters for all the cases that the canvas will cover, together with blankets and pillows, as many bedsacks as possible, and a number of shirts, drawers and socks.

In addition to the above the hospital train must carry the officers' personal baggage, 1 field desk axes, picks and spades for pitching and trenching tents, digging sinks, burying the dead &c. and forage for horses and mules.*

The field hospital should also be supplied with an apparatus for boiling drinking water, the Waterhouse Forbes sterilizer appears to be the most satisfactory so far devised for troops in the field.† A small acetylene plant for the lighting of the operating and administration tents is likewise desirable and practicable. An X ray machine would be useful and in the way at the field hospital where only immediately necessary operations are performed (par 39).

ON THE MARCH AND IN CAMP

23 On the march the ambulance corps (personnel and material) is in the immediate rear of the division. The men of the three companies march together in column of fours, followed by pack mules, ambulances, surgical, subsistence and baggage wagons.

Whenever a brigade operates independently, or at some distance from its division, as for instance in vanguard or reconnaissance duty, its ambulance company follows it.

Only the junior regimental surgeons march with their regiments, each riding in rear with his orderly. One ambulance, in charge of an acting hospital steward, also follows each regiment, two H. C. privates march in front of it, one of them rides on the rear step when it carries patients.

Any patient who cannot find room in his regimental ambulance is given a diagnosis tag which is also a permit to wait by the roadside for the ambulances of his brigade company.

24 The Chief Surgeon of the division is with the General Commanding. The Captains in command of the ambulance companies are with their respective companies, under the direction of the Major commanding the ambulance corps. The train of the ambulance corps and immediately behind it is in charge of a lieutenant of the line, acting assistant quartermaster. (Par 13).

The hospital train should be at the head of the light baggage train of the division. It is also in charge of a Lieutenant of the line, acting assistant quartermaster. (Par 13). With it marches the hospital personnel including the two mechanics. But if a battle is impending, the Commanding Officer of the hospital, his executive officer and two sections of his men follow directly in rear of the ambulance corps, so as to be able to locate and prepare the site for the hospital pending the arrival of the train. If the latter be long delayed or gone astray, they assist the ambulance corps.

25 At the end of the day's march, each company, with its ambulances and wagons will bivouac as near its respective brigades as convenient. The necessary tents are pitched and every arrangement possible under the circumstances is made for the comfort and security of the sick and wounded. The wagons of the ambulance corps will generally be sufficient to supply immediate wants, so that the hospital train need not be brought up until a more or less permanent camp is reached.

As soon as possible after the division goes into camp Surgeons' call is sounded in each regiment the sick and wounded more than temporarily unfitted for duty are furnished with diagnosis tags and sent to the company ambulances.

It is unnecessary for the regimental ambulances to rejoin their respective companies, from which they may be far distant, at the end of each day's march, if they are able to carry, or otherwise procure, grain and forage for the animals.

The officers, stewards and privates detached with each regiment remain with it in camp, but may mess with their respective companies if conveniently near.

Every effort should be made by the chief surgeon to evacuate all serious cases to the rear or leave them in local hospi-

itals by the way, if necessary, part of the field hospital is set up and left behind for this purpose.

26 In a permanent camp, each regiment should have on duty with it two medical officers, at least two stewards and six H. C. privates and be provided with an ambulance and team.

There is no regimental hospital, each regiment has one hospital and one wall tent as office and dispensary, where the sick report at surgeon's call, patients requiring hospital treatment are sent directly to the brigade or division hospital. So long as the division is closely united, the division hospital answers all purposes and remains consolidated, if the line be much extended the hospital may be divided into its several sections, each being placed in convenient proximity to its respective brigade and ambulance company.

The field hospital may occupy suitable buildings, if any are available, otherwise it consists of hospital and conical tents (par 22) arranged in three lines, one for each brigade, the lines radiating from a centre where are the operating, dispensing, administration and mess tents, or else forming a triangle with the above tents inside of it.

The ambulance corps, if united, is camped, in the vicinity of the hospital. If, as will be generally the case, the companies are separated, each is camped in the most suitable place in rear of its brigade the officers and men on one side of the picket line, the ambulances and wagons on the other.

27 The sanitary rules which should control the establishment of a permanent camp, so as to prevent the production and propagation of disease are of the highest importance and worthy of the best efforts of medical officers. More lives can be saved by their intelligent application than by the observance of the most approved methods of treatment on the battlefield and an experienced hygienist will often be of much greater benefit to an army than the most skilful surgeon.

The first and most important rule is that very large bodies of men should not be encamped together unless required by stern military necessity. A division of 10,000 or 11,000 men should be the largest command located on any one site, and so disposed that no part of it can be polluted by the drainage of any other part. The water must be strictly guarded against contamination, and if not above suspicion, should be sterilized by boiling the Waterhouse Forbes sterilizer having been found best for the purpose (par 22). The disposal of excreta is a troublesome problem but one which must be solved if the usual camp scourges, typhoid fever and dysentery are to be prevented. The sinks should be carefully disinfected with earth, quicklime or ashes three times a day, and every man who fails to use them severely punished. A much better system, whenever practicable is the removal of all feces from disinfected latrine troughs by means of odorless excrevators and their burial as far away as possible, or incineration in crematories. The part played by the mosquito in the propagation of malarial and yellow fever must be borne in mind and action taken accordingly wherever these diseases are apprehended. All fever cases of a suspicious nature should be promptly isolated until a definite diagnosis is made.

(To be concluded.)

MEDICAL SOCIETY

THE BOMBAY MEDICAL AND PHYSICAL SOCIETY

THE most important article in the *transactions* of the Bombay Medical and Physical Society is that by Captain G. Lamb, I. M. S., on the "precipitans of cobra venom," which, as it has been already published in the *Lancet* (August 16th, 1902), we do not propose to reproduce here.

We quote the following case of dysentery treated by tincture of *Monsonia Ovata*, though we are not convinced that the patient would not have been cured more rapidly by the judicious use of sulphate of soda. It is by Dr J. Ignatius de Quadros, I. M. & S., who writes—"I first tried *Monsonia* in the case of a male patient aged about 33 years. He partook of some tinned fish on the evening of the 27th May. On the morning of the 28th he complained of diarrhoea, and by evening had five very loose stools with griping pains in the abdomen. Then the stools began to get dysenteric and he took to bed. When I saw him he had already passed 20 stools, and the most marked symptoms were anorexia, nausea, slight fever, great pain and tenderness along the large bowel, great tenesmus and the frequent passage of blood and mucus in the stools. I prescribed one drachm doses of *Tr. Monsonia* in a vineglassful of thin arrowroot congee every two hours for the first four hours, with linseed poultices to the abdomen. He was to be fed on nothing but thin arrowroot congee but boiled water was allowed to allay the incessant thirst he complained of. I saw him again on the evening of the following day. He had not slept the whole of the previous night and had had a motion almost every hour until morning. Throughout the

* If all the baggage cannot find room in the hospital wagons, the most necessary articles are carried along the others are left at the base or some depot on the line of communication and sent for later if needed.
† Sterilization of water for troops in the field with description of apparatus. By Major W. Reed, U. S. A. *Proc. Ass. Mil. Surg.*, 1899.

night he had been given in all six drachms of the tincture. During the day the stools were not so frequent and were changing in character. The last one contained no blood, less mucus and more fecal matter. There was no nausea and the tenderness and tenesmus were not so marked. He had slept for about two hours. I directed the tincture to be continued every four hours, the dose being the same, and in addition to the arrowroot, gave the patient whey and lime water in equal parts. On the following day, 30th, he seemed well, had slept well and had no fever, thirst, or tenesmus, though the abdomen was still tender along the colon. He had had no stools except two in the previous night. On the 31st he felt well, had one stool only in addition to one on the night before both constipated. I omitted the Monsonia and the poulticing and put him on a Soda Bicarb mixture, without changing the diet. On the 1st June he was keeping well and was ordered more food of a light character, such as soups, milk and custards. My next experience of the Monsonia was with a person employed as a clerk in a mercantile firm. He saw me on the 30th May and said he had been suffering from dysentery the whole of the preceding week. On examination I found marked emaciation, abdomen rather full and great tenderness along the large bowel. The temperature was 100°, but the patient said it went up in the evenings. He complained of sleeplessness at nights and of pain and much straining when passing a stool. On an average he had sixteen stools in the 24 hours, small in quantity and containing blood, pus and mucus. I ordered him into bed with poultices upon the abdomen to be applied every 3 hours and prescribed—

Tr Monsonia Ovatā 3i	Mucilaginis 3i
Liq Opī Sedatīvī m ʒi	Aq Cinnamon ad ʒi
Mix Every three hours	

By the following day, when I again saw him, he had an ounce of the Tr Monsonia in all and felt better. The temperature had gone down to 99. He had passed four stools in the night and two in the morning. Though still shredly, they contained some fecal matter, while there was less blood, mucus and pus. I continued the same treatment only adding 6 grs quinine, morning and evening, the patient still keeping on diet. I visited him again next day when I found him improving. He had only one stool at night and two in the morning, the last being diarrhoeic in character, yellowish, no blood, some mucus and pus and more fecal matter. The pain and tenderness were also less. Beyond directing the mixture to be taken every four hours instead of three, I made no change in the treatment. I next saw this case on the 3rd when the man had slept well, had no fever and only one stool since the 1st. He was constipated and the abdomen was still tender. I now discontinued the Monsonia and gave Soda Bicarb x grs and 5 gr quinine powders. The man was quite well on the 5th.

I had again occasion to use the Monsonia in the case of a girl, aged 16, who had been ailing for 1½ months before I saw her. Her complaint began with an attack of diarrhoea which was never properly cured. For a month before coming to me she had been passing six or seven stools daily, small in quantity, but marked with blood and mucus, and attended with much straining. She also complained of a burning pain in the rectum with the sensation of the presence of a foreign body and a constant desire to expel it, but a rectal examination disclosed nothing more than some soreness about the part. The stools which I saw were shredly, contained some fecal matter, blood, mucus and pus and emitted a very foul smell. I gave her an ʒth grain powder of Hydrarg c Crota as an intestinal antiseptic and a drachm of Tr Monsonia every three hours, the diet being limited to thin arrowroot. She was asked to come again after three days when she reported herself as better. The bowels had moved only three or four times daily during the interval, the last stool was constipated, containing more fecal matter, less pus and mucus, and no blood or bad smell. The rectal pain, though present, was less. I discontinued the powders and ordered the rest of the treatment to be continued for six days.

On the sixth day she felt well again, passed one stool in the morning and another in the evening. They were constipated and passed with ease, and contained a little slime but no blood. The patient felt better, was in better spirits and had a good appetite. She was allowed milk, a little toast and chicken soup. The treatment was stopped save for a tonic mixture. She was kept under observation for a fortnight, after which, as no bad symptoms appeared, she was sent unopportunity for a change of air.

The following discussion took place on a paper by Lieutenant-Colonel W H Henderson, L.M.S., F.R.C.S.I., on two cases of Ulcerating Granuloma, the disease so well described by Maitland of Madras, and by medical officers in British Guiana.

"Some member present to day may recollect my showing a case of this disease on June 20th, 1900. On my taking charge of the Sassoon Hospital in the following November, I found that the man had migrated to Poona and was occupying a bed in that institution. Curiously enough, in the next bed I discovered a second case. A local artist has made very fair pictures of both cases, which I submit for your inspection. The only point I wish to bring to the notice of the meeting is that one of the cases was subjected to the influence of the X rays for a considerable time without, however, the slightest benefit. Has any member any experience of successful treatment for this affection? I should be glad of any suggestions on the subject.

Dr Arthur Powell said he had seen a number of cases which agreed with Dr Daniel's Sclerotising Granuloma. He had seen Daniel's, Galloway's and other specimens, photographs and sections.

Whatever the case may be, the drawings exhibited show no granuloma which is the essential part—a *new granuloma* *in situ*—the ulceration being merely a secondary or accidental feature of the disease.

It may be the fault of the artist. He (Dr Powell) had excised the growth and used the actual cautery freely to his cases, but usually a portion persisted, requiring further treatment.

Captain S Evans also read an interesting case of abdominal tumour, and Mr E S Bhattacha some notes on a case of central embolism which much resembled in some respects a case of cerebro spinal meningitis.

ANNUAL REPORTS

THE TRIENNIAL HOSPITALS REPORT, BURMA

This report is a condensed one of 15 pages on the working of the Civil Medical Institutions of Burma from 1899 to 1901—

The total number of patients treated is now well over a million, but is still only 10 per cent of the population. There exists a desire to increase the number of hospitals, and 102 new hospitals are proposed but it is very difficult to get hospital assistants. Apparently Burmans won't take to this line, and imported hospital assistants from India are difficult to obtain. It appears that beggars from India find in these hospitals havens of temporary rest even when they are not "unmistakably ill." The Burman has not yet taken kindly to the hospitals, and the patients are usually Indian emigrants. Colonel Little J.V.S., the Inspector General of Civil Hospitals, writes as follows on the subject of out-patient attendance—

"Considerable improvement has been made during the year in connection with the comforts and conveniences of patients, such as separate waiting accommodation and separate dressing rooms for males and females, a better supply of douches and fittings, more attention to aseptic precautions on the part of dressers, to better arrangements for privacy in the examination of patients and to the entertainment of a female nurse wherever funds were available. Municipalities have been urged to entertain a Dufferin nurse to attend upon the female patients, both in door and out door, with permission to engage in private practice as a midwife. Fifteen such nurses are now employed in municipal hospitals.

My proposals for improvement have always been carefully considered by Dispensary Committees, and these bodies have cordially co-operated with me in endeavouring to remedy defects and to increase the comfort of their hospitals in regard to those small details which make so much to the well being and contentment of the sick.

But after all it is the Medical Officer who makes a dispensary popular or the reverse and everything depends on the personal exertions of the doctor in charge.

As a whole the Subordinate Medical Department in Burma has done, and continues to do good and useful work, and there are many amongst them with a high sense of duty, more especially those who commenced service in the Military Department, where they learnt subordination and discipline. On the other hand, there are men, the Bengali especially, who are very wanting in both subordination and discipline and without the slightest sense of duty in their composition. Men who invariably scamp their work and will even mangle to shirk an unpleasant duty, or to get away from a climate which may not suit them. No dispensary can be popular at the hands of such a man, but owing to recent difficulties in the recruitment of hospital assistants for Burma, we have had to accept any and all we could get. More than one reference was made to Government in this connection during the year.

It is evident from the above strong remarks that Burma by no means gets the best of the medical subordinates trained in our Indian Colleges.

The following appears in the report about the General Hospital Rangoon, to the staff of which he have been indebted for many valuable contributions of late years —

"The one civil medical institution in the city of Rangoon requires a few words to itself

The ward accommodation provided is the same as in the previous three years, namely, 461 beds and of these 330, or 71.6 per cent were in daily occupation. The vacant beds have been in the European wards, while the accommodation for natives has been more or less overcrowded throughout the year

The hospital is at present under municipal management, but it has been suggested that Government should take it over, and proposals for a new hospital and for the reorganization of the establishment have been submitted

The following statement compares the attendance at the hospital for the triennial period —

Year	In door	Out-door	Total
1899	8,058	50,620	58,678
1900	6,841	40,845	47,686
1901	7,067	52,445	59,512

The aggregate number of patients treated during the triennial was 174,919, or a decrease of 9,292 over the total for the previous three years

The accommodation for female out patients is not satisfactory, and may in a measure account for the small attendance of women

Indeed, the present external accommodation is altogether insufficient. In the proposed new building it is contemplated that the dispensary will be quite separate from the hospital and provided with adequate waiting and examination rooms

The daily average attendance for the past year was 205, and the crowding inside the barrier leading to the examination and prescribing room was often unbecomingly. In 1899 and 1900 the daily average attendance was 202 and 285 respectively

Capt. Rost's experiments on the origin of beri beri are referred to in the following extract —

"This disease is not shown separately in any of the prescribed statements, but its prevalence in Rangoon has been noticed in previous reports. During the past year 416 cases with 219 deaths were treated in the Rangoon General Hospital, including seven cases that occurred on board the light houses and light vessels off the coast of Burma.

The history of the latter cases goes to show that the disease is contracted after about three months' residence on the light-ships. The symptoms begin with listlessness and weariness on exertion, pain and formication in extremities, followed by œdema along the front of the tibia, loss of knee reflex, ataxic gait, muscular degeneration and the abnormal heart conditions peculiar to beri beri. If removed in time from the locality where the disease was contracted the patient usually recovers, otherwise the œdema, general weakness, muscular degeneration and cardiac trouble increase, and the patient dies suddenly of heart failure

The cause of the disease has not yet been traced. It has been attributed to a micro organism in diseased rice, but the disease is rare amongst Burmans, who are essentially rice eaters being here chiefly confined to natives of India. It has also been attributed to poisoning by carbonic acid gas in crowded and ill ventilated quarters. In fact beri beri has been attributed to all sorts of causes but beyond its being a disease of locality, its etiology has not been proved

Dr Axel Holst, Professor of Medicine at the University of Christiania accredited here by the Secretary of State, was given every facility of studying the disease at the General Hospital and in the light-ships. He is of opinion that food supplies have something to do with the disease and that the provision of fresh food is one of the best means of stopping an epidemic, but the pathological puzzle still remains unsolved

We are glad to observe the steady increase in the list of major operations, abdominal sections, hernia operations, cataracts and even litholapaxies show a steady increase

"Captain Duer treated eleven cases of cirrhosis of the liver with ascites by omento-ventral fixation, and a similar operation was performed by Captain Rost for enlarged spleen

The operation of ventral fixation of the great omentum was originally proposed for the treatment of alcoholic cirrhosis of the liver attendant with incurable ascites, the rationale of the operation being to set up a collateral circulation to relieve the portal system and thus get rid of the ascites

Captain Duer reports that this operation has been extended to cases of ascites other than alcoholic cirrhosis, such as malarial disease of the liver. He states three or four cases have been eminently satisfactory, and as such cases are well nigh hopeless when left to themselves, I think the method worthy of being generally adopted. The operation consists essentially of a median laparotomy and the fixation of the

omentum against the muscles of the abdominal wall. Adhesions rapidly develop, new vessels form, which assure the return of the portal blood into the vena cava without excess of pressure, and as a result without the production of ascites

Captain Rost has performed three similar operations for hypertrophy of the spleen. In all the cases operated upon there was, Captain Rost reports, a very marked reduction in the size of the spleen within a few weeks

The names of Major R. S. Davis, Capt. C. Duer, Captain C. O. Barry, and Captain E. R. Rost, I.M.S., are specially mentioned for their share in the surgical work of the Province

PUNJAB HOSPITALS ANNUAL REPORT

THIS Report is submitted by Colonel A. Scott Reid, I.M.S., now Surgeon General, Punjab Army

Twenty eight dispensaries were transferred to the new Frontier Province, leaving only 246 institutions under the Inspector General of Civil Hospitals in the Punjab. We note that it is under consideration to provide Jullundur with a hospital capable of accommodating 200 patients

The figures this year can only be compared with those of previous years by deducting those for hospitals transferred to the new Province

As in the two previous years it is to be noted that Jullundur Hospital easily heads the list, with a formidable total of 4,028 operations, the Lahore Mayo Hospital follows next with 3,784, and Rawal Pindi with 2,704

The following table shows the enormous number of cataract operations done in the Punjab

	1899	1900	1901
Cases	5,321	5,614	6,887
Cures	4,174	4,625	5,204
Percentage of cures	85.7	89	91 per cent

No less than 1,312 patients underwent the operation for cataract in Jullundur Hospital

The following are the figures for Stone Operations during the past 3 years —

Year	CUTTING					CRUSHING		Deaths	Percentage of deaths including remaining from previous year
	Supra pubic	Lateral perineal	Median Vaginal	On females by dilatation	Total	Lithotomy	Litholapaxy		
1899	0	2 2	0 0	10	209	1,844	1,844	{ From cutting 71 ,, crushing 60	11.7 3.2
1900	14	215	0 1	0 8	259	1,031	1,636	{ From cutting 26 ,, crushing 62	10 3.18
1901	12	180	13 4	8	212	1,700	1,807	{ From cutting 10 ,, crushing 48	8.71 2.63

The total amount of these operations was more than in the preceding year, but less than in 1899. The percentage of deaths has been steadily declining, and the figure for last year must be considered very encouraging

The Inspector General continues as follows —

"Among the officers who may be specially mentioned for good surgical work are Major H. Smith, Civil Surgeon Jullundur, who alone performed 1,718 cataract operations; Lieutenant Colonel T. R. Mulrony, Civil Surgeon, Amritsar, and Lieutenant-Colonel F. F. Perry, Professor of Surgery, Lahore Medical College; Major D. M. Davidson, Civil Surgeon, Delhi, performed the largest number of stone operations, 142, mostly at Mooltan. Among Assistant-Surgeons, Rai Bahadur Mehr Chand, Senior Assistant-Surgeon, Amritsar Civil Hospital, Assistant-Surgeon Diwan Ali, Shabpur Civil Hospital, Assistant-Surgeon B. C. Ghosh, Jagadhri Dispensary, and Assistant-Surgeon Rai Bahadur Phakar Das, Rawalpindi Civil Hospital, deserve mention. Senior Hospital Assistants Pir Bakhshe and Nawab Shah also did good surgical work at Ahmadpur and Bhera, respectively

The above figures form a record of successful surgery that the Indian Medical Service as a whole may well be proud of

PUNJAB VACCINATION REPORT

THE report is submitted by Lt. Col. C. J. Bamber, I.M.S., the Sanitary Commissioner. The total number of vaccinations done shows a decrease, owing to suspension of work due to plague,

famine, and cattle disease. The Government, we note, agree with Lieut Col Bamber that vaccination work cannot be neglected on account of plague.

The percentage of success for primary vaccinations is put at 81 per cent, a low figure, but one, we imagine, nearer the truth than some figures we have read of. It is not satisfactory to read that several towns with a Compulsory Vaccination Act had their children worse protected than other towns in which the Act is not in force. Municipal Committees as a rule, in our experience, care little for vaccination and the man who really values vaccination, the Civil Surgeon, has not the power to make the "Compulsory" Act a reality.

On the subject of animal lymph and vaccine lymph the Sanitary Commissioner remarks as follows—

"An estimate of the amount of success attained by vaccination done with either vaccine lymph paste or animal lymph can be made by taking the figures of the vaccination operations done in the Moga District with both varieties. Of the 8,848 primary vaccinations performed by the District Staff with animal lymph, 8,747 or 99·7 per cent were successful. Of the 7,131 primary operations, performed mostly by the Special Staff with vaccine lymph paste, 5,824 or 81·9 per cent, were successful, the reason for the vaccine lymph being less successful than the fresh animal lymph is that the vaccine lymph was used in the warmer months when the percentage of success is always less with all kinds of vaccine lymph. Another reason is that the vaccine used is prepared at the Animal Lymph Depot without the direct supervision of a Deputy Sanitary Commissioner. Taking all this into consideration the percentage of success is very fairly good."

The instructions of the Government of India for a trial on a large scale of glycerinated lymph could not be carried out for lack of proper special assistance. On this point Lieut Col Bamber remarks—

"These facts, as well as the falling off in the work of the Special Staff, all point to the absolute necessity for a Deputy Sanitary Commissioner who can devote the whole of his time to the duties of vaccination. Expensive apparatus has been obtained from England for the preparation of vaccine, but it must remain idle while there is no officer to use it. In my report for the year 1898-99 I pointed out the necessity for the careful preparation of vaccine in a Central Depot for the whole province, this matter which is of the very greatest importance cannot be proceeded with until an officer is provided who can carry out the experiments ordered by the Government of India in their letter No 63, dated 8th January 1900."

We commend the Diagram to face page 6 of Report, to the attention of other Sanitary Commissioners. It is clear and graphic as such diagrams ought to be.

VACCINATION IN ASSAM, 1899-1902

Four pages in all that is allowed for a three year report on vaccination in Assam yet in this short space Colonel Carr Calthrop, M.D., F.R.S. has contrived to say a good deal about vaccination in the province of Assam. The number of vaccinations was 280,827 in 1901, showing a steady and substantial progress. The number of vaccinations done by medical subordinates of dispensaries used to be very small, but the withholding of allowances for this extra work had the good effect of throwing these officers out of their apathy and indolence. The percentage of successful vaccinations reached the high figure of 97, which considering the well known excellence of fresh Shillong lymph may be accepted, but we share with Colonel Carr Calthrop a scepticism as to the figure of 81 for re vaccinations, and we believe with him that this is largely due to the inclusion among the successful of small, abortive, and insignificant vesicles, which not uncommonly follow the operation of re vaccination but which we have always included among the failures. As regards the Inspecting Staff Colonel Carr Calthrop writes as follows—

"In only three districts, did the number of inspection of primary vaccinations made by Civil Medical Officers themselves exceed 4,000, these were, 7,211 done by Captain A. Leventon in Sibsagar, 4,401 done by Military Assistant-Surgeon Bancroft in the Garo Hills, and 4,100 by Captain H. S. Wood in the Sylhet district. I consider this very creditable to Captain Leventon. The percentage of number inspected by lower agencies was the lowest in the Cachar district, 28. The attention of the Civil Surgeon has been expressly invited to the backward state of vaccination in his district, and it is to be hoped that next year's figures will show a marked improvement. In Dooargah and Goalpara the proportions were 32 and 34, and in Sylhet, Kamrup, Darrang, and Sibsagar about half of the number vaccinated were subsequently inspected, while at Dibrugarh no less than 69 per cent were verified. This is distinctly creditable to Major Hall. The Native Inspectors of Vaccination have, however, as a class not done well, many of them have given a great deal of trouble, and the sanitary work they have been called upon to do in the off season has been abominably scamped in more than one instance. Most of these men are paid by Local Boards, and

there is great difficulty in transferring them or keeping them in any sort of discipline. The question of the reconstitution of Local Boards is in hand, and when this is settled, I shall propose to replace most if not all, of these local inspectors by Hospital Assistants of the regular provincial establishment."

We are glad to see that in one province of India at least the Compulsory Vaccination Act can be called successful, in that in Assam 80 per cent of available infants were vaccinated. As regards compulsion the term is hardly applicable, as in the whole province 15 persons were punished in 3 years.

In the Shillong Depot in 1901 02 no less than 305,317 tubes of glycerine lymph were filled, from 404 calves, each animal therefore furnished enough to give an average of 779 tubes.

The Depot was efficiently managed by Lieutenant Colonel G. Duncan M.S., and Hospital Assistant K. C. Datta. It appears that the pernicious practice of small pox inoculation has not yet died out and several outbreaks of the disease have been traced to this practice. Indeed the inhabitants of Hailakandi are so bentighted that they actually petitioned the Chief Commissioner to stop vaccination and permit inoculation. This shows the attitude of the people towards sanitary reform. We are glad to see that Dr S. M. Das' pamphlet on vaccination was distributed over the districts. As the result of some experiments on the keeping qualities of vaccine lymph, Colonel Carr Calthrop is able to write as follows—

"I think it may therefore be concluded that the glycerinated lymph as stored in hermetically sealed tubes will not keep for more than 4 months, even in a cool place, and it begins to deteriorate after three months storage. It has been further ascertained that it will not keep for two months in the plains in the hot weather and probably not for more than one. I presume the reason to be that the glycerine, which at first rapidly destroys all extraneous germs, in time renders the vaccine virus itself sterile and inert. For long keeping, it appears that storage in lanoline or vasoline must be resorted to. As failures greatly annoy the parents of children operated on, I do not propose to make any further experiments with glycerinated lymph, but next season I will try how our virus keeps when preserved in lanoline."

The whole report is an interesting one, indeed the Assam Vaccination Reports of recent years are the most interesting of all the provincial reports on the same subject.

VACCINATION IN MADRAS PRESIDENCY

The annual report is written by Captain J. W. Cornwall, M.S. Acting Inspector of Vaccination and Deputy Sanitary Commissioner Madras. In Madras the Vaccination Establishment is divided into 33 first class Deputy Inspectors on Rs 60 to Rs 70 a month, 30 second class Inspectors on Rs 40 to Rs 50 a month, 275 first class Vaccinators on Rs 15 to Rs 20, 418 second class Vaccinators on Rs 10 to Rs 12 and 141 probationers on Rs 5 to Rs 7, making a total staff of 834. These officers performed over one million and a third operations during the year. The vast majority of vaccinations are done by Local Fund Vaccinators, the percentage of successful cases is high, 91. The results show an increase in infantile vaccination the average cost of each successful case works out at 3 annas 6 pies.

The percentage of success with different kinds of lymph in primary and secondary vaccination (re vaccination excluded) is compared below—

Number of cases excluding unknown	Area.	Method	Whence obtained.	Percentage of success
216,606 * 68,463	Local funds Do	Call to arm Animal lymph in tubes and plates	Locally Transferred from calves for transport or economical reasons	98·4 96·1
114,476	Do	Glycerinated lymph	Locally prepared in different centres	86·9
200,141	Do	Lanoline lymph	Supplied by the Bangalore Institute	93·8
186,608 46,681	Do Municipalities	Do Do	Locally prepared Different sources	90·4 91·9
20,764	Do	Glycerinated lymph.	Locally	93·2

* Includes cases in Madras City

There remains much to be done before vaccination is on a satisfactory basis in Madras, as in other provinces of India. It is expected that the opening of the new Vaccine Institute will result in a supply of good and uniform lymph.

THE REPORT ON THE HOSPITALS OF CENTRAL INDIA

In our issue for May (p 193) we commented on the fact that no medical statistics were published in the annual report for Central India.

We have been since informed that this was due to the separate publication of the Medical Report, which we have now before us.

There are now 102 dispensaries in Central India, and close on a million patients attended them, no less than 40,331 surgical operations were performed, and the report states that Lieutenant Colonel Pat. A. Weir and Lieutenant Colonel Gmiletto performed a large number of important operations. The new Memorial Hospital at Gwalior is magnificently equipped, and the Report tells us that Major I. R. Roberts, F.R.C.S., I.M.S., had already largely increased the surgical work in Gwalior. We note that the following medical officers performed a large number of major surgical operations—Lieutenant I. H. Delany, 306, Lieutenant Colonel Pat. A. Weir, I.M.S., 317, Lieutenant Colonel G. H. Gmiletto, 213, Major W. H. Neilson, I.M.S., 120, Lieutenant Colonel A. Dano, I.M.S., 90, and Major Malcolm Moore, I.M.S., 40.

An interesting note is made on the existence during the famine of lathyrism, the form of paraplegia due to eating the pulse known as *krani* or *lathir*. This plant is largely grown in Bhopal and Gwalior. Lieutenant Colonel Dano, I.M.S., writes: "When mixed with other grains this plant is not so deadly in its effects but in the districts mentioned it formed the sole food of thousands of the people of the lower classes, and when I visited the Bhopal districts during the cold weather, I found whole villages in which nearly every male was more or less paralysed, and hundreds of them had died, being unable to travel in search of food to the various relief camps. The villagers say the stronger a man is, the more quickly he is affected. Women are hardly affected at all."

This form of paralysis is, of course, well known in India, being due to the continued consumption of *lathyrus sativus*. In the famine of 1897 we saw many cases in Shahabad and other Bihar districts, we also know of one case, a prisoner in jail, who after five years regular feeding in prison practically recovered the use of his limbs, so that we opine that the disease is not absolutely irrecoverable if plenty of good food is available.

THE PERSIAN GULF AND MASKAT AGENCIES
REPORT, 1901-02

The Medical Notes in these reports are short and not of general interest.

"Maskat has enjoyed complete immunity from epidemic disease. The duties of Health Officer of the port were last year entrusted by the Sultan to the Agency Surgeon, and this year also, the preventive arrangements under his supervision have been carried out most satisfactorily and with an entire absence of friction. On the transfer of Captain F. A. Smith, I.M.S., to India, just before the end of the year, His Highness wisely continued the same arrangement in the case of his successor, Captain J. W. Grant, I.M.S."

THE RAJPUTANA MEDICAL REPORT

This report is submitted by Lieutenant-Colonel T. Ffrench Mullen, I.M.S., Residency Surgeon, and Chief Medical Officer in Rajputana. The report deals with the year 1900-01, and was signed by the Chief Medical Officer in August 1901, but it has only recently reached us.

The recent census shows a difference of some 11,000 between the total recorded deaths and the actual census returns, due in a large measure to deaths during the famine not being always registered by the local officials of the village. It is recorded that about 50,000 deaths were directly and indirectly due to famine and its attendant diseases.

Cholera, of course, raged among the famine stricken, and may well have been introduced by crowds of starving mendicants. 373 cases also occurred in the jails of Native States. Every where special establishments of medical relief were organised. We note that sanitary steam tramways have turned out successful both in Ajmere and Jodhpur. Owing to the continued famine there was a falling off in vaccination, the great mortality among cattle seriously interfered with the supply of buffalo lymph.

There are now 166 dispensaries in Rajputana, not counting numerous "famine" dispensaries.

An extensive epidemic of malarial fever prevailed throughout Rajputana during September, October, November and December. This apparently was contemporaneous with the great outbreak in the Punjab. The nature of the epidemic has never been thoroughly investigated, but it is here noted that the "beneficial" results of quinine were thoroughly investigated.

The real nature of these widespread and deadly epidemics needs special investigation. Except in India and in the Mauritius we never read of epidemics of malaria in other countries on this enormous scale.

Plague did not seriously attack the Rajputana States, except in two villages. As regards surgical operations 2,586 were performed in Ajmere, Merwar, and over 60,000 in the States of Rajputana.

Lieutenant-Colonel P. Durell Pank, I.M.S., is far ahead in the number of operations performed, his score being 341, followed by the late Lieutenant Colonel A. Adams 182 and Major Robinson, 138. The health of the jails in Rajputana in a famine year was naturally bad, but steady progress is being made in the management of all jails in the Native States. The Bikanoor jail is said to be a model of what a Native State jail should be and at Bharatpur Major Drake Brockman, I.M.S., has done wonders in improving the discipline and health of the prisoners. The report says that it is proposed to make the agency surgeons, superintendents of these jails, at present generally speaking, discipline is not strictly enforced.

The asylums are not satisfactorily managed, and no attempt is made to cure amuse or occupy the inmates. A Central Asylum on modern lines is evidently badly needed in Rajputana.

We note that the Agent to the Governor General regrets to observe that the subjects of sanitation and registration of vital statistics does not receive the attention they deserve. We may contrast this remark with the last words of the Report (p. 19) in which it is stated that the 'Residency Surgeon at—, was not consulted by the Resident at any time during the famine. Verh. Sep.

Correspondence.

A CHRONIC CASE OF MALARIAL FEVER

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—(1) Dhondu a Mahratha boy aged sixteen, came to me for treatment. He had been suffering from malarial fever for three months past. The type of fever was quotidian. His spleen was enormously enlarged, his conjunctiva anemic and his face pale owing to malarial cachexia.

On admission I gave him a mild purge and put him on Mixt Quinine (gr 3—oz) thrice daily. The boy took the mixture for a fortnight but his fever would not subside. I then began to treat him with Mixt Arsenic, but this mixture too would not serve the purpose. The boy was tired of taking medicine, and I myself was much annoyed to see a case of simple malarial fever not yielding to two most powerful anti malarial agents quinine and arsenic.

I then in utter despair gave him iodine perchloride as the last remedy in 10 m doses 4 times a day, and to my surprise the boy did not have his usual turn of fever again. His health improved gradually under small doses of the drug continued for a fortnight. The present case shows how iodine perchloride acts as an anti periodic in obstinate cases of malarial fever.

KALIAN

Yours, &c
K. H. MODAK
Qualified Medical Practitioner

THE LEAST QUANTITY OF FOOD A MAN CAN LIVE ON

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—Can any of your numerous readers enlighten me on the question as to what is the least quantity of food per diem a man can live upon, preserving fairly good health?

POONA

Yours truly, LUX

P. S.—I beg to enclose my card herewith.

A CASE OF HYSTERIA WITH DIURESIS

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR—A Hindu girl, aged seventeen years, has been subject to hysterical symptoms for the past six years. She had been under the treatment of the most leading physicians at Madras, but found only temporary relief. From the previous history, and the symptoms exhibited by the patient, the conclusion of her being hysterical is beyond any doubt. When I was called to see her on the 17th instant, she had only slight fainting fits which lasted from fifteen to twenty minutes each time. The most prominent symptom that drew my attention was the abnormal quantity of urine passed by the patient every day. For the first twenty-four hours the quantity of urine voided was 192 ounces. On examination the specific gravity was 2 degrees above zero, i.e., 2 degrees lighter than distilled water. Reaction was neutral. There was no colour whatever, no albumen or sugar, no smell or taste. The patient complained of great thirst, and there was much exhaustion with increased nervous irritability. Appetite was entirely lost, with frequent nausea and occasional vomiting. Heart's action was weak and irregular. Pulse small and easily compressible. She fainted frequently, but not longer than fifteen minutes at a time. The patient was a married woman, but widowed 4½ years afterwards. The symptoms developed themselves gradually two years after marriage. She has had no children, but suffered from menorrhagia at the outset.

The quantity of urine gradually decreased under the use of ergot, digitalis and strychnia. The specific gravity rose by two degrees every day. The colour of the urine became normal in a week, and the fainting fits did not recur since. The quantity of urine last passed was only 48 ounces with a specific gravity of 1018 and acid reaction. The girl, though still weak, is in good spirits.

MADRAS, SUDDEPETT

A G FONCECA,
Chil Apothy

A CASE OF LITHOTRITY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I herewith send a report of a case of perineal lithotomy performed in Hissar Civil Dispensary —

Name—Chandao
Caste—Hindu Jat.
Residence, Hamoud—Hissar district.
Age—4 years
Duration of disease—3 years
Date of admission—8th April 1902.
Date of operation—9th April 1902
Date of discharge, 20th April 1902
Result—Cured
Weight of stone—2 ounces.
Nature—Uric acid

Remarks.—Though the age of the child was stated to be four years, he was so miserably emaciated that he appeared to be only two years old. No lithofrite was passed with a little difficulty, but was found to be too small to grasp any portion of the stone. No lithofrite would not pass into the bladder on account of the small size of the urethra, the only alternatives were—

- (1) Lithotomy, perineal or lateral
- (2) Supra pubic lithotomy
- (3) Perineal lithotripsy

The stone was found. Lateral and supra pubic lithotomy were considered more dangerous than perineal lithotripsy on account of the size of the stone and debilitated condition of the child. Hence the preference given to perineal lithotripsy. No lithofrite being used.

The case recovered without a single bad symptom, and was discharged cured in 13 days from date of admission.

Yours, etc.,

RAMJI LALL
Asst Surgeon, HissarSOME REMARKS ON CAPT ROST'S PAPER ON
BERI BERI

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—Having read Dr Rost's paper on Beri beri in this Journal (No 7) 1902, I beg to make a few remarks —

During my stay at Rangoon, in the beginning of this year Dr Rost was good enough to show me some of his experiments, etc. —
1 The feeding of fowls with fermenting rice. The results of these interesting experiments were quite as described by Capt Rost as far as the symptoms of the disease were concerned. But do these symptoms prove that the disease is Beri beri?

I am not sure about this. As Dr Rost has observed, I found on most of the *past masters* of Hindoos who died, during my stay, in the General Hospital at Rangoon, some marked signs of an inflammation of the intestines. Other observers have found the same, and I am inclined to imagine that this alteration has something to do with the disease. But in spite of this experience, the human beri beri is comparatively seldom connected with diarrhoea, which symptom seems to be constant as far as the fowl disease is concerned. Further the human patients suffering from beri beri do not show any symptom which might be compared with the fowls losing their feathers and finally, though the fowls cannot, towards the end of the disease, keep on their legs, this may be due to a lack of strength as a result of the diarrhoea. In order to prove that this symptom is to be paralleled by the paralysis of beri beri, it is indispensable to examine the periphonic nerves and prove that they are degenerated, but as far as I know, this has not yet been done.

2 The injections of blood from beri beri patients in fowls and of blood from diseased in healthy fowls.

As I left Rangoon, Dr Rost had just started a series of these injections. Seeing their most interesting results, I beg to make the following remarks.

I have myself tried to inject blood from a beri beri patient in fowls at Batavia. The experiments did not succeed, though the blood was taken from a quite fresh case. Considering that the experiments were but few, I should not have paid any attention to them, if I had not, at the same time, also always failed to

find any peculiar organism in the blood of beri beri patients. The same has been the case with other observers, such as Koch.

Therefore the question arises, if, on the whole, there is any special reason, why the blood of beri beri patients should contain any microbe at all. I cannot imagine such a reason except in the beginning of the disease when the patients mostly seem to be feverish.

CHRISTIANIA, NORWAY, }
26th September, 1902 }Yours etc
ALEX HOLST,

Professor in the University of Christiania, Norway

Service Notes

COLONEL W MCCONACHY, M D, I M S, P M O, Karachi, has been appointed Surgeon General of Bombay. Surgeon General McConachy entered the Bombay Medical Service on 1st October 1859. He has been Superintendent at Mathuran and Mahabaleshwar, and Civil Surgeon of Karwar, Dharwar and Poona. He became P M O, Sind, in September, 1895.

LIEUTENANT COLONEL A H C DANF I M S Agency Surgeon, Bhopal, who has just returned from nine months' furlough, is first on the 'Brigade Surgeon' selected list in Bombay. He has been appointed P M O in Sind.

CAPTAIN I H MACDONALD I M S P A to the Bombay Surgeon-General, has been appointed Chief Medical Officer for Plague Operations, Bombay, vice Major W E Jennings, I M S, gone on furlough. Major Jennings has been on continuous plague duty since the post first appeared in Bombay more than six years ago, and has thoroughly earned his leave.

MAJOR P STRICKLAND, I M S, is permitted to return to India for duty.

CAPTAIN C MUIF, I M S, on return from leave was posted to Balha as Civil Surgeon.

MAJOR L I PIRANI, I M S, F R C S, on return from furlough, is posted to Rae Bareilly as Civil Surgeon.

THE services of Captain G F Stewart, I M S, M B, are placed at the disposal of the Bombay Government for employment on plague duty.

THE following are the services of Surgeon General A Scott Reid, I M S, who gets the Good Service Pension in room of Surgeon General Harvey deceased. —Joined as Assistant-Surgeon, 30th March 1872, Surgeon, 1st July 1873. Surgeon Major, 1884, Brigade Surgeon, 1897. Surgeon Colonel, 19th May 1899. Surgeon General 16th June 1902. Surgeon General Scott Reid remained in military employ chiefly with the 2nd Bengal Cavalry and 24th Goorkhas, for many years. Among other appointments he held the Civil Surgeoncy of Quetta for 9 months, the Medical Storekeeper ship at Meer Meer on two occasions. He was P M O of the General Hospital at Malakand in 1897 and P M O, Lahore District, P M O Kohat Kurram Force, 1898-9. A M O Central Provinces from 1899 to 1902. Inspector General of Civil Hospitals, 1902, and now Principal Medical Officer, Punjab Army from 16th June, 1902. He served in Afghanistan 1879-80, Chin Lushan, 1889-90 and North West Frontier, 1897-8, dispatches, medal and 2 clasps.

WE understand that Major Alpin, I M S, Civil Surgeon of Missouri, is hard at work on a scheme for a European Hospital for that station.

THE Government of India has decided that officiating promotion to the administrative grade does not exempt an officer to the Indian Medical Service from the rule requiring him to retire from the service on attaining fifty five years of age.

LIEUTENANT COLONEL D I HARRY, I M S, Civil Surgeon, Cawnpore, proceeds on fifteen months' furlough immediately, Lieutenant Colonel J F MacLaren, I M S, Civil Surgeon, Benares, replaces him.

INDIAN MILITARY SERVICE FAMILY PENSION REGULATIONS — The following addition to, and at the end of, Rule 26 of the Regulations is promulgated for the information of all concerned.

"As an exception to this rule, an officer, who is granted a compassionate allowance on resigning the service, may continue to subscribe at the half rate of subscription."

LIEUTENANT R E LLOYD, I M S, is appointed to the officiating medical charge of 2nd Bengal Lancers, Lieutenant, W V Coppinger M D, I M S., to that of 3rd Bengal Cavalry, and Lieut. W M Anderson, I M S., to that of 6th Jats.

DR E J SIMPSON, Officiating Superintendent, Barroilly Central Prison, held also Medical charge of Barroilly, during the absence of Lieutenant-Colonel I Sykes, I M S, the Civil Surgeon

MILITARY ASSISTANT SURGEON CARROLI is appointed to the Civil medical charge of Basti, U P

ON return from leave Lieutenant-Colonel T H Sweeney, I M S, R C S I, returns to Benares as Civil Surgeon

THE following are the arrangements for the new Bearer Companies—The Corps will be subject to the orders of the Commander in Chief, and will form an integral part of the military medical service. It will be composed of four divisions corresponding to the four commands, each of which will be subject to the Lieutenant General of the Command and General Officers Commanding Districts in all matters of discipline. Each division will be placed under the Principal Medical Officer of the Command, with a special Staff officer taken from the medical service to supervise the administration, organisation and recruitment and to assist in mobilisation. These special Staff officers will be appointed for five years, and will receive each a staff allowance of Rs 400 per mensem, and when absent from headquarters a deputation allowance of Rs 5 per diem. An Assistant Surgeon from the Indian Subordinate Medical Department will be attached to each company for the discipline, training and general interior economy, and will also be available for hospital work. He will receive a charge allowance of Rs 50 per mensem, and will be appointed for five years, remaining with his company in peace and war. He will be eligible for re-appointment after the end of the first period. For this purpose the Indian Subordinate Medical Department will be increased by 37 Assistant-Surgeons including the reserve.

COMPOSITION OF THE CORPS

The new Army Bearer Corps will consist of such men of the existing establishment of bearers as may be qualified by caste and fitness, supplemented by recruits. They will all be enrolled under the Indian Articles of War, and will be divided into three grades, namely, sirdars, mates and bearers. The total strength of the corps will be 6,000. The bearers will be organised in 28 full companies of 200 men each and four reduced companies of 100 men each. The full companies will each comprise two sirdars, six mates and 192 bearers. Reduced companies will have exactly half the strength in each grade.

DISTRIBUTION

The following will be the distribution of the 32 companies by number among various military districts:

Punjab Command—Peshawar, No 1, Rawalpindi, Nos 2 and 3, Punjab Frontier Force No 4, Lahore Nos 5 and 6, Sirhind, No 7

Bengal Command—Meerut, No 8, Bundelkhand, No 9, Allahabad, No 10, Nerbudda, No 11, Oudh, Nos 12 and 13, Rohilkhand No 14, Presidency, No 15, Assam No 16

Madras Command—Madras No 17, Bangalore, No 18, Southern, No 19, Secunderabad, No 20, Belgaum, No 21, Rangoon No 22 (reduced), Mandalay, No 23 (reduced)

Bombay Command—Bombay Nos 24, Aden 25 (reduced), Poona, No 26, Mhow, No 27, Deesa, No 28, Sind, No 29, Nagpore, No 30, Quetta, Nos 31 and 32

Except during war, or when war is imminent, the bearers can claim discharge after three years' service. In peace time it is understood that they can be employed on any Government work suitable to their caste such as punkha pulling, water carrying, and work in commissariat godowns. This, we think, is a mistake, the men should not, in our opinion, serve under any other authority than that of the Medical Department.

WE are officially informed by the Director General of the Navy Medical Department, that, in future, the fees (not exceeding £25) of the naval medical officers who undergo a three months course of study at metropolitan hospitals will be paid by the Admiralty, in addition to travelling expenses, with lodging and provision allowances according to scale.

THE Secretary of State for War has allowed that candidates for commissions in the Royal Army Medical Corps who are over the regulated limit of age at the date of the competitive examination shall be permitted to deduct from their actual age any period of service in the field after October 1st, 1899, that they would be allowed to reckon towards retired pay and gratuity if such deduction will bring them within the age limit.

THE contents of the "Naturalist in Indian Seas," just published by Murray for Major A Alcock, M B, I R S, I M S, Superintendent of the Indian Museum, Calcutta include an outline of the origin of Marine Survey, in East Indian waters, an account of the objects and methods of marine surveying in general, and particularly of the methods employed in deep-sea research, and general sketch of the hydrography and zoology of

the Indian Sea basins, with numerous original biological observations and nearly a hundred figures of all the characteristic types of deep sea life, narratives of four surveying cruises to numerous coasts and estuaries of the Indian Peninsula and to many of the little known Islands of the Andaman and Laccadive Archipelago, a descriptive catalogue of "Investigator" deep-sea dredging stations, and a complete bibliography of the scientific work hitherto published by the Naturalists Department of the Indian Marine Survey.

THE Commander in Chief has directed that all classes of manual servants employed in barracks including punkha coolies, shall be invariably medically examined on engagement, those who are found to be suffering from organic disease being rejected.

ALL executive medical officers in the field are to be allowed the same powers of purchasing small quantities of medicine in emergency as are laid down for medical officers in charge of general hospitals in the field.

LIEUTENANT COLONEL BROWN, I M S, Principal of Madras Medical College, is appointed to act as P M O, Madras District, vice Colonel Johnston, I M S, about to retire.

IT is expected that Lieutenant Colonel Allison will soon be come P M O, Rangoon, on the occurrence of the next vacancy.

WE extract the following from the letter to the *Times* on the R A M C new warrant. The writer on the whole is a strong supporter of the new warrant, and believes that it will be of great advantage to the corps and stimulate recruiting.

As the question of I M S pay has not yet been settled, and is becoming an urgent matter we quote the following—

"As with the Army at large, so with the Royal Army Medical Corps, Mr Brodrick enters into competition in the labour market with other employers of labour, and finds himself compelled to raise the wages of his employees."

	Old Warrant	New
Director General	£1,500 p a consolidated pay and allowances	£2,000
Surgeon General	£2 15 per diem, pay only	£3 0 0
Colonel	2 0 0	2 0 0
Lt Col specially selected	1 10 0	1 15 0
, on promotion	1 5 0	1 10 0
Major, after 3 years in the rank	1 2 6	1 6 0
Major on promotion	1 0 0	1 3 6
Major, after 3 years in the rank	1 2 6	1 6 0
Captain, after 7 years service	0 13 8 (after 2 years in the rank)	0 17 0
, on promotion	0 11 0	0 15 6
Lieutenant	0 11 0	0 14 0
, on probation	0 8 0	0 14 0

As soon as corresponding rates of increase are announced for India, we may then expect the pay of I M S officers to be proportionately increased, always bearing in mind that the pay of the latter must always be in excess of that of officers of R A M C. We hope also that as regards pay in civil employment it will be borne in mind that private practice in the ordinary mofussil station is now of small value, and is steadily diminishing.

THE following note on the average earnings of medical men in general practice in England is of interest.

"To compare these prospects with those of civil medical practice, take the private statement of an agent who has had 20 years' experience of dealing with the transfer of practice. He says—

"I take the average gross income of 50 per cent of medical men starting general practice to be (a) at starting £500, (b) after three years £600, (c) after ten years, £800 to £900, (d) after 20 years, £900 to £1,200 per annum. The professional expenses, including drugs, dispensary, horses, carriages and stable expenses may be taken as averaging, at the outside one third of the gross income, reducing the gross earnings to net incomes of £333, £400, £600, and £800, respectively. The capital required to start on the above lines would vary between £750 and £1,500. The selling value would increase in the same ratio as the income."

THIS is very well as far as it goes, but the army medical man has many expenses not here taken into account, and it is doubtful if he could possibly save as much as a civil practitioner earning the same annual amount. Transfers, for instance, are a fertile source of loss to the army medical officer, this the private practitioner escapes.

THE services of Captain J Mulhany, I M S, and of Captain F H Watling, M B, I M S, are placed permanently at the disposal of the Government of Bengal for employment in the Jail

artmont. Captain J Mulvany is Superintendent of the Presidency Jail, Calcutta, and Captain F H Watling, Superintendent of the Central Jail at Midnapore

CAPTAIN J FISHER, M B, D S O, officiates as Agency Surgeon, Meshed, during the absence on leave of Major A L Duke, I M S

LIEUTENANT L E GILBERT, I M S, handed over charge of Civil Hospital, Kengtung to Lieutenant S Bose, I M S

LIEUTENANT L P BRASSEY, I M S, made over charge of Civil Station, Maymyo, to Captain C R Pearse, I M S

LIEUTENANT COLONEL T R MULRONEY, I M S, Civil Surgeon of Amritsar, is granted six weeks' privilege leave

ON return from furlough Captain C R Stevens, I M S, F R C S, is appointed Civil Surgeon of Midnapore

THE following Senior Assistant-Surgeons, with the honorary rank of Lieutenant, to be Senior Assistant Surgeons, with the honorary rank of Captain dated 15th April 1901 —

Bengal Establishment — William Thompson and George Carstin
Madras Establishment — Samuel Ebenezer Falconer, Valentine James Staggs, Edward Powney, Ebenezer Mahoney and Anthony Lawrence Cabral

First Class Assistant-Surgeons to be Senior Assistant-Surgeons, with the honorary rank of Lieutenant. Dated 15th April 1901

Bengal Establishment — Sidney Alfred Wall, George McCall, William Mason, James Albert Bailey, Charles Carroll, William Alexander Hoppeolotte, William Mardant James George Fleming, Patrick Poomey George Gill, John Gibb, Arthur Herbert Nolan and John Charles Bailey

Madras Establishment — William Edward Hondricks, James William Pritchard, Thomas Archibald Bay, George Thomas Carroll Thomas Augustus Samuel Connor, Francis John Careck, William John Montgomery and James Robert Simon

Bombay Establishment — Ignatius Chaves, Julius Eugene D Rozario and Andrew John Baptist Vaz.

The King has also approved of the retirement from the service of the undermentioned officer —

First Class Assistant Surgeon Frederick William Barker of the Indian Subordinate Medical Department, Bombay, has been transferred to the pension establishment.

LIEUTENANT D S BAKER, I M S, was appointed to the civil medical charge of Dinapore, in addition to his regimental duties

CAPTAIN G KING, I M S, made over charge of duties as Civil Surgeon, Dera Ismail Khan, to Captain S A Harris, I M S

MAJOR A J MACNAB, F R C S, I M S, took over the civil medical duties of Mardun, from Lieutenant J Husband

THE services of Major F Wyville Thomson M B, I M S, are placed at the disposal of the Central Committee Coronation Durbar, from 15th October, for sanitary and plague duty

LIEUTENANT COLONEL W E GRIFFITHS, I M S, for many years Medical Officer, 20th (D C O) Punjab Infantry, has been permitted to retire from 6th January 1903

THE following Majors are promoted Lieutenant-Colonels, I M S —

A W D Leahy, F R C S
R R Wair M B
R E S Davis, M B
W H Neilson, M B
W H Burke, M B
John Crimmin, C I L., & C

CAPTAIN L H MADDON, M B, I M S, Civil Surgeon of Ranchi, is appointed Medical Officer, Chota Nagpur Mounted Rifles

MAJOR S E PRALL, I M S, has been permitted to return to duty within the period of his leave

IN a recent Gazette we are glad to see that Dr A Crombie, I M S, late of Calcutta, has been made a C B

MAJOR T E DYSON, I M S, M B, on return from leave, is appointed Deputy Sanitary Commissioner, Gujarat.

LIEUTENANT COLONEL J P BARRY, I M S, M B is appointed (sub *pro tem*) Presidency Surgeon, Third District, Bombay, Lieutenant-Colonel K H Mistri, I M S, is sub *pro tem* Civil Surgeon of Thana, and Major C T Hudson, I M S, is appointed sub *pro tem* Civil Surgeon, Broach

LIEUTENANT COLONEL K S NARIMAN, I M S, reverts to his substantive appointment as Civil Surgeon, Surat, but continues to act as Civil Surgeon, Nasik

CAPTAIN H BENNETT, I M S, continues to act as Civil Surgeon of Surat.

LIEUTENANT COLONEL G A EMERSON, I M S, Civil Surgeon, Ghazipur, holds additional medical charge of Ballia.

THE Secretary of State has permitted the retirement of Colonel G Hutcheson, M D, I M S, recently Inspector General of Civil Hospitals, U P A and O

CAPTAIN S A HARRIS, I M S, made over charge of the civil medical duties of Dera Ismail Khan to Captain J King, I M S, on 22nd September

CAPTAIN J M WOOLLEY, I M S, has joined the Bengal Jail Department

CAPTAIN H R J TWIGG, I M S, has joined the Bombay Jail Department.

THE following extract is from a volume on the life of Baron Larrey, recently published by Dr Paul Triere —

‘Drawn in the footsteps of the conqueror throughout his vertiginous course, Larrey filled an important place in the Napoleonic epic. He was present on every battlefield, and established his ambulance in all the capitals of Europe. In this long and glorious series of campaigns, in this marvellous and dramatic triumphal march when the armies of France advanced from the Nile to the Danube from Austerlitz to Madrid, from Wagram to Moscow, and from Leipzig to Waterloo, the figure of this army surgeon emerges, stands forth in surprising relief by the side of those warriors whom a hundred victories have consecrated. A character is revealed wherein science, authority, valor and humanity are combined in a degree never seen before and probably never to be seen again. In spite of a defective organization, Larrey contrived, single handed, to raise the medical service to a level with the rest of Napoleon's army. By the side of the machine made perfect for conquest and for death he placed another equally perfect but designed to succour and to preserve. From the inferior and discredited rank wherein, notwithstanding their talents, their good service and their personal sacrifices, the members of the healing art were subordinated in old time armies, he raised himself to the level of the most illustrious captains and of the most celebrated physicians. From the one class he borrowed talent and intrepidity and from the other science and devotion thus in his own person uniting the virtues of both.”

Notice

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Lt Col F W Wright, I M S, D S O	50

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The 1 metformins Guide Longmans & Co.
Allchin's Manual of Medicine, Vol. IV (Macmillan & Co.)
Baker's Hygiene for India
Australian Plague Reports
Pamphlet on Plague Foroz Din Mohoff
Lower Cancer of Uterus, H K Lewis (10s 6d)
Windle's Surface Anatomy (3rd Ed.) H K Lewis (4s)
Customs Report, Bengal
Civil Veterinary Report, Bengal
Morck's German Index

COMMUNICATIONS, LETTERS, RECEIVED FROM —

Lt-Col R D Murray, I M S, Calcutta, Major Johnson, I M S, London
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